ARTISAN

WARM AIR HEATING
RESIDENTIAL AIR CONDITIONING
SHEET METAL CONTRACTING

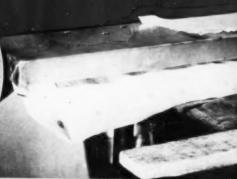


SAVING MONEY under the

HOW TO CURE crawl space

COMPLETE contents of this

PROGRESSIVE POLISHING brings out original luster of stainless steel72



NEW Century

Performance-Rated®



Now available in 1...1½...2 H.P. sizes— NEMA frames 182 and 184.

Improved Motors

to match your needs

SMALLER - LIGHTER

More uniform silicon-laminated steel; thinner, tougher "Mylar" slot insulation — just two of the many technical developments that help make these new Century Performance Rated Motors so much smaller and lighter.

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New concepts of internal motor ventilation permit end bracket and frame design that gives far better protection from falling liquids and solids . . . still maintain 40° C. temperature rise.

MORE FLEXIBLE MOUNTING

You can even have cushion mounting with these new Century Integral H.P. Motors — your choice of sleeve or ball bearings. Ball bearing motors mount vertically, upside down, in any position. End brackets can be rotated for floor, ceiling or side wall mounting.

EVEN MORE DEPENDABILITY

Improved plastic impregnating varnish and plastic insulated magnet wire provide unusual resistance to abrasion, moisture and heat. These new materials possess far better dielectric qualities. Die cast aluminum rotors are individually, dynamically balanced to assure freedom from vibration.



Offices and Stock Points in Principal Cities Specify CENTURY Performance Rated motors for your equipment. Call a Century District Sales Office or your nearest Century Authorized Distributor.

CENTURY ELECTRIC COMPANY • 1806 Pine Street • St. Louis 3, Missouri

"Sundstrand has a nice deal on replacements through service stations"

Alvin Anckersen, Partner Automatic Heating Co. Appleton, Wis.





Alvin Anckersen, Partner (right), outlines Sundstrand advantages to prospect



Reuben Eichsteadt, Partner and Service Manager

Alvin Anckersen and Reuben Eichsteadt, partners in the Automatic Heating Co. of Appleton, Wis., are enthusiastic boosters for Sundstrand Fuel Units. And, after twenty-four years in the heating business, these men know what they are talking about.

They point to Sundstrand's compact, modern design, greater lift, ease of servicing, freedom from leakage, super-quiet operation, and low maintenance costs.

Sundstrand's warranty repair policy came in for special commendation. By working through the nearby Sundstrand Service Station, any fuel unit found defective within the 18-month warranty period is repaired or replaced without cost to the dealer. This policy, introduced by Sundstrand several years ago, reduces costs, saves time, and improves customer relations for the firm.

These comments from owners of the Automatic Heating Co. about Sundstrand Fuel Units are echoed by thousands of contractors throughout the world. Add them up and you find out why Sundstrand is first with manufacturers, servicemen, service stations, dealers, wholesalers, and users. Get latest data bulletins and prices on:

HIGH-PRESSURE UNITS

Single- and Two-Stage for 3, 6, 10, 14, 20 gph firing rates . . . Strainer capacities — 6, 10, 15, 20 gph. (Can be furnished for either fuel oil or gasoline).

LOW-PRESSURE UNITS

Two-Stage with fixed or variable metering. For .4 to 1.5 gph firing rates.

SUNDSTRAND MACHINE TOOL CO.

Hydraulic Division, Rockford, Illinois Made in Canada by John Inglis, Ltd. 14 Strachan Ave., Toronto

SUNDSTRAND

A name to remember in FUEL UNITS

ARTISAN

NOVEMBER 1954

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Founded 1864

Volume 91 No. 11

WARM AIR HEATING RESIDENTIAL AIR CONDITIONING SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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1 Heavy 12-gauge superbly designed gas tight heat exchanger is the vital heart of your furnace unit. Carefully designed and tested, the internal flow of gases distributes temperatures evenly over all the surface and in combination with the heavy gauge metal insures efficient long lived operation and complete safety.

2 Large area replaceable spun glass filters treated to remove dust and dirt and provide clean healthful air.

3 Large size dynamically balanced blower set in rubber assures gentle circulation of dust free warm air through your home. Blower is assembled, installed, tested and adjusted at the factory.

4 Silent Runner Flame Burner is the result of years of research by Syncromatic Engineers. Built to obtain full combustion of the gas and the greatest amount of heat possible from the fuel consumed.

Scientifically designed for quiet operation, smooth lighting and extinction with all gases.

5 Attractive Syncromatic green baked enamel jacket completely seals the furnace unit and controls. The solid base section is raised off the floor on heavy steel rails insuring the casing against rusting from floor damp.

6 The accurate and positive locking alignment of the Silent Runner Flame Burner under its own individual tube or heat exchanger insures you of the highest results in efficient heat transfer.

7 All controls concealed under jacket.

8 Motor is continuous duty resilient mounted with overload protection. It is mounted on an adjustable base and cushioned in rubber to minimize sound. It is equipped with variable speed pulley for easy adjustment (not shown in illustration).

SYNCROMATIC IS THE DEALER'S CHOICE

Quality control in production means that every GF and GFU Series furnace is Line-Tested. Every unit is factory assembled and wired, closely inspected, and operated before shipping. This assures fast, trouble-free installations. Syncromatic's amazingly quiet operation and ignition characteristics with all

gases, make it a real favorite with installers in all parts of the country.

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City	Zone	State	

the editor's notebook

Thumbing Through This Month's Artisan

that sheet metal contractors have a growing market when they know How to Erect Roof Decking. The author, A. T. Krueger, points out the advantages of metal roof decking over other materials and tells how its acceptance by builders and industrial plants is opening up another big field for the sheet metal contractor.

of How to Surface Finish Stainless Steel is brought out in the article by E. M. Rains, as he points out the important things to do when welding and bending sheets of this material, all of which have a bearing on the quality of the finished product.

... and we see why Lawrence Gichner's Christmas parties are a success year after year. In his article this month, How to Have a Successful Employees' Christmas Party, Mr. Gichner passes along the lessons he has learned in over 10 years as host to his employees and their families.

. . . and we see still another reason why sheet metal roofing is getting more and more popular. Roofing with Longer Terne Sheets (cut from seamless 50 ft rolls) cuts down on the number of cross seams which, of course, gives a neat appearance, reduces chances of leakage, and shortens installation time. Author A. L. Veverka describes how this material was used to roof an area of 6000 sq ft. He gives us all the details how the sheets were laid on



the editor's

(continued)

rosin sized paper and kept in a straight line, how corners were notched, etc. He also discusses expansion and contraction, offering the opinion that additional seams (which would result from using shorter sheets) are unnecessary.

. . . and we find when Installing a Crawl Space Heating System that a minimum of heat loss through the perimeter walls and along the top of the foundation results when it's according to the recommendations offered by Arthur Fink, Mr. Fink uses a 55 lb waterproof membrane laid over tamped earth to keep moisture migration at a minimum during both summer and winter months and a 3/4 in. blanket of insulation secured to the foundation walls.

Sees Copy of AA — Orders Subscription

WE WERE, of course, happy to receive Albert A. Danckert's letter telling us that after looking through a friend's copy of American Artisan, he has decided to become a regular subscriber. "I find that the contents are very timely and could be very useful to me," he writes. "Please advise me as to the subscription rates so that I may enter my order as soon as possible."

Union Joins Management In Fight on "Waste"

PAUL B. WISHART, president, Minneapolis-Honeywell Regulator Co., writes me that he recently invited Air Force Secretary Harold E. Talbott to participate in the official launching of a joint company-union program designed to cut down waste in production. In his letter of in-

The CHAR-GALE AVE duct system. Small pipe advantages, PLUS!



40% MORE CAPACITY

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ott ial mied roinIncreasing the diameter of the pipes in a small pipe system from 4 inches to 4½ inches as has been done by Char-Gale using the Char-Gale register-and-box unit, adds more than 40% to the BTU capacity.

Take a good 4-inch pipe system, with all its advantages ... increase the capacity by a surprising margin ... top it off with a register-and-box unit engineered to match it ... and you have Char-Gale's 4½-inch duct system, the finest thing in small pipe installations. The additional capacity of this addition to the Char-Gale line means more adequate handling of the furnace output and provides more BTU's per run.

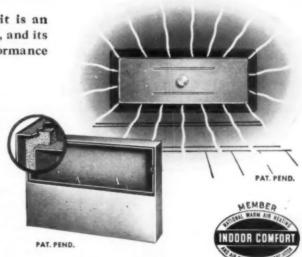
Char-Gale saves you time and labor, by giving you a complete system, well engineered and easy to install. Customer satisfaction and increased profits for you result from this new Char-Gale system with small pipe advantages, PLUS.

Char-Gale's NEW register unit

Char-Gale's new register-and-box unit is an integral part of this new $4\frac{1}{2}$ -inch system, and its use is vitally necessary for the proper performance of the system.

The new Char-Gale register distributes heat evenly in all directions, with no drafts or blasts of hot air. It is adjustable, permitting complete balancing at the registers, and has a positive shutoff without noise.

Designed for either dry or wet wall construction, the new Char-Gale register box eliminates the need for a plaster frame. The foam rubber gasket provides a positive seal, with no leakage of air between the register and the register box.



Literature on this system is now available.

CHAR-GALE MANUFACTURING COMPANY

the editor's notebook

(continued)

vitation, Mr. Wishart says, he pointed out that industry today is confronted with the necessity of finding ways and means of reducing production costs in the face of tightening markets, and that the extent to which it succeeds - or fails - has a direct bearing on the nation's continued economic health. Commenting on Secretary Talbott's acceptance of the invitation, Mr. Wishart says, "The fact that Secretary Talbott was willing to take time out from his busy schedule to come to Minneapolis for the occasion is evidence that those in our government share the interest of thoughtful managements and unions in the continued economic well-being of industry and our nation."

Graduation Dinner for 39 Chicago Apprentices

I was PLFASED to attend the 1st anniversary graduation exercises of the Joint Apprenticeship Committee for the sheet metal industry in the Chicago area. Certificates of completion were awarded 39 graduating apprentices by Edward F. Carlough, General Secretary-Treasurer, Sheet Metal Workers' International Association. Complete details will be published in American Artisan for December.

Changing Outlook In Marketing

LOOKING THROUGH a recent issue of *Industry's View*, published by the National Association of Manufacturers, I was interested to note that marketing today accounts for some 67 per cent of the nation's business. It is one of the country's three leading economic activities, along



the editor's notebook

with production and agricul-

From an agricultural nation in 1860, the publication points out, the United States has grown until today our manufactured output equals that of all the rest of the world. Some 15 million salesmen, it is noted, are employed to handle the selling of today's tremendous output of our factories and farms.

OHI Washington School Ends Successful Term

OIL HEAT INSTITUTE reports that 10 students graduated from the Washington, D. C., service training school with marks higher than 72 percent. Graham Shields, managing director of the Washington chapter, presented OHI certificates and awards to the students with the highest marks.

"Ideal facilities," OHI says, "excellent equipment, a small class and top-notch instruction, proved to be just the right combination. The school will, of course, be repeated next year."

Evaluates Ways To Buy Machinery

THE LACK of ready cash should not deter any company from buying the machinery and equipment it needs to decrease costs and increase profits," according to Sydney D. Maddock, president, C. I. T. Finance Corp. Mr. Maddock refers to the four usual ways (aside from paying cash) by which the management of a business may buy the machinery it needs. These are: 1) getting a short-term bank loan; 2) making capital issues; 3) getting limited credit from the machinery manufacturers;

for over 20 years. The oldest chimney lining installations are still in good operating condition.

To use the best product for chimney lining write today and get the full story. The demand for Vitroliner is growing in every city with the demand for modern fuels.

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you make a Pittsburgh

on a hand brake, you're paying 15 times as much in labor costs as you would pay to make that same seam on a Lockformer. It doesn't take too many seams before you've "paid" for a Lockformer... and until you actually get one, you'll keep on "paying" for more and more Lockformers... Lockformers that you never receive!

Of course, you don't have to have a Lockformer. But it just isn't worth all the extra money it costs you to get along without one. So do yourself a favor: write for the Lockformer Catalog today.

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ONE MAN WITH A LOCKFORMER MAKES MORE PITTSBURGH LOCKS THAN SIXTEEN MEN WITH EIGHT BRAKES

THE LOCKFORMER CO.

4615 WEST ROOSEVELT ROAD . CHICAGO 50. ILLINOIS

the editor's notebook

(continued)

and 4) using a term-loan from an industrial financing company. He points out certain drawbacks to the first three plans — so far as the purchasing of machinery and equipment is concerned — and explains that the fourth financing plan was devised to fill the gaps in the other methods.

The procedure is simple, he says. When the buyer is ready to negotiate with the seller, he supplies the financing firm with the details of the contemplated purchase. When the financing agency says it is prepared to finance the machinery purchases, the buyer makes his down payment to the seller and executes documents provided by the finance company. The financing agency provides funds for the balance due on the equipment and the buyer subsequently makes his payments to the financing firm each month. Such programs are particularly valuable, he concludes, when purchases are to be made from several different sources. The buyer is able to treat them all as one obligation with the industrial financing firm.

Sees Unlimited Future For Steel Industry

I WAS MUCH interested in Edward L. Ryerson's recent statement that "the steel industry is growing with such a vigor that predictions of 200 million tons of annual capacity within the next 25 years seem conservative."

Mr. Ryerson, chairman of the executive committee of Inland Steel Co., was speaking at ceremonies held at Saugus, Mass., dedicating the restoration of the first iron works on the North American continent.

"Steel is so basic to all



easier, quicker FALL INSTALLATIONS

Furnace Pipe and Fittings

During the busy fall months — when heating systems are being installed or remodeled — precision-made, standardized Ohio Valley pipe and fittings will make more money for you. They save time — and that means extra profit. Order your fall stock NOW.

CARRIED IN STOCK BY LEADING WHOLESALERS

Write for our Catalog.



OHIO VALLEY HARDWARE CO., Inc. MANUFACTURING DIVISION, EVANSVILLE, IND.

the editor's

(continued)

other production," he said, "that its uses multiply with each new development of labor saving devices and push-button operations in the home and farm and factory. The demand for steel could easily double within a generation, and its ultimate usefulness in an atomic age cannot even be surmised at the present stage of experimentation."

Profit Sharing Group Moves to Chicago

THE COUNCIL of Profit Sharing Industries informs us that it has completed its move from Akron, Ohio, to Chicago. The council's new address is 337 W. Madison St., Chicago 6. Executive secretary Joseph B. Meier said that the new location was chosen because over 80 per cent of the organization's members are located within a 500 mile radius of the city. "We will now be in a better position to serve everyone," he says.

How to Make Employees Feel They "Belong"

I was interested in the remark made recently by Clem D: Johnston, president, U. S. Chamber of Commerce, that American business wants its employees "to feel that instead of working for us, they are really working with us." Mr. Johnston was speaking at a recent "Explaining Your Business" conference, a service offered by the national chamber to aid business men in their public relations programs.

He pointed out that making employees feel that they "belong" pays dividends two ways. "It benefits the employees," he said, "by encouraging teamwork, which acts as a safeguard for their

Yes sir... right down the line there's more profit for me in

MIDCO

You bet I go for the Midco line. I've learned from experience that Midco registers, grilles and floor faces outperform and out-sell all others. What's

more, better-looking Midco registers are priced no higher.

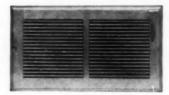


Baseboard Balanced-Flow Perimeter Diffuser. Beautifully designed in clean, simple lines — easy to install.

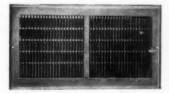


NO. 305

1/2" vertical fin sidewall multiple louver register for commercial
air conditioning.



NO. 20 Horizontal fin sidewall register

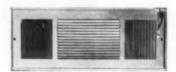


NO. 30
1/4" vertical fin sidewall register



NO. 101

Ceiling Diffuser grille only — Smart, modern square design with remarkable new effectiveness. Blades adjustable to eliminate drafts. Available in 6" - 8" - 10" - 12" and 14" sixes.



NO. 89

Perimeter sidewall diffuser. Newest and most attractive perimeter sidewall aspirating unit yet designed.



NO. 512 Perimeter floor register



NO. 99 Out-of-wall or in-the-wall perimeter register

Some jobber outlets are still open Write today for the full Midco story

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Once you investigate the complete Midco Line,
you'll agree — Midco quality leads the field.
Midco gives you performance you can count on,

beauty you can be proud of, and a sound margin of profit for a competitively priced product.

the editor's notebook

present jobs and an escalator to better jobs; by giving them a sense of security; and by giving them a satisfaction on the job and with the job that goes beyond the satisfaction contained in the pay enve-

"As for the employer who shares his problems with the shop — he soon discovers the age-old truth that you can buy head power and you can buy hand power, but you can't buy heart power - and that is often the difference between the success or failure of any free enterprise."

Gives School 20 Year Library

FRED W. KOCH, Saginaw, Mich., writes to tell us that he has presented his father's American Artisan library to the Saginaw High School. "Dad passed away recently," he explains, and we (his family) felt that his file of Artisans, which he has maintained over the past 20 years, can serve its best purpose if it is made available to young men interested in the heating and air conditioning field. We have, therefore, decided to turn his library over to the Saginaw High School, and ask that you send any additional copies still due on his subscription to that address also."

Artisan Subscriptions As Graduation Gifts

WE ARE PLEASED to note that Local No. 65, Sheet Metal Workers International Association, apparently feels that an apprentice's education isn't over as soon as he completes his training course. J. R. Dietz, financial secretary for Local 65, writes: "We would like to place an



the editor's notebook

(continued)

order for 28 three-year subscriptions to American Artisan for our apprentices who graduated this year. Attached is a list of their names and addresses."

This action is in keeping with the policy followed by many progressive dealers and contractors who encourage employees to develop their proficiencies, not only through reading about new and improved techniques being introduced to the field. but also by attending the various schools and special courses conducted throughout the country by manufacturers, wholesalers and national associations.

Central Cooling Installations Up 100%

RESIDENTIAL central air conditioning installations this year number twice those made in 1953, said F. J. Van Poppelen, general manager of the General Electric Co.'s air conditioning division at a press conference I attended last month.

G.E.'s air conditioning business across the board residential, commercial and industrial - is up 50 percent over last year, he said. His division has practically doubled its air conditioning facilities in the last year, and it is expected they will continue to increase for several years to come.

G. K. Iwashita, general manager of G.E.'s commercial and industrial air conditioning department, expressed the opinion that a house without air conditioning will be a "drug on the market well within 10 years - maybe in five."

Clyde M. Barner

THE Biggest Value IN Everything FOR HEATING • COOLING • AIR CONDITIONING

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You Have a Unit
for ANY JOB
With Most Units
Approved for Either
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 Luxaire dealers can offer a bigger value that yields a bigger profit — and at prices that will meet any competition!

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See your Luxaire jobber for prices, catalogs and selling helps today! Let him show you how profitably one phone call show you how profitably one phone can be for all your requirements for any job!



THE C. A. OLSEN MANUFACTURING COMPANY . . ELYRIA, OHIO
HEATING & AIR CONDITIONING UNITS



One of the 400 Glick-built Electronic Comfort Homes in St. Louis. Electronic Moduflow temperature control was installed in this air-conditioned house by the Welsch Furnace Co.

"We're installing Electronic Moduflow in 400 houses for one St. Louis builder!"



says Heating Dealer Vincent Welsch

"A hot sales item in St. Louis these days is Honeywell Electronic Moduflow – with its outdoor thermostat.

"We've had great success with it, especially with local builders. A good example is our sale of 400 sets of Moduflow to Melvin Glick, a prominent St. Louis builder.

"Mr. Glick is offering deluxe, year-round comfort in his homes – central heating and air conditioning. He was quick to see the advantage of having the finest temperature control system.

"When we recommended Electronic Moduflow,

we also pointed out its promotional value. That's one reason Builder Glick now features an *electronic comfort* home in all of his advertising – it stimulates interest in prospects right away.

"When prospects realize that they'll have indoor temperatures which are automatically adjusted to the outside weather, they know they're getting the ultimate in modern home temperature control.

"Another good thing about Honeywell Electronic Moduflow—it's easy to install and service, in existing homes as well as new ones. As you can see, we're really sold on it!"

TENNON 2 REMARK TOWN PORCE LANGE TOWNS TO THE PROPERTY TOWNS TOW

How Electronic Moduflow works

The Electronic Weathercaster (1), mounted outside the house, senses the outdoor temperature and by means of electronic signals continually tells the Electronic Clock Thermostat (2) what indoor temperature is required to maintain comfort. This Electronic Clock Thermostat, mounted in the living room, signals the Relay Amplifier (3) which automatically tells the heating plant to provide the amount of heat required to keep the house at the right temperature – no matter how changeable the weather might be.

LIFE MAGAZINE ADVERTISING CAMPAIGN HELPS PRE-SELL YOUR PROSPECTS

Honeywell is using an extensive national advertising program – 13 spreads in LIFE Magazine to keep increasing demand for Moduflow. In addition, literature, displays and other materials are available. Write for them.

Honeywell

Electronic Moduflow

112 OFFICES ACROSS THE NATION

Why your customers need varying indoor temperatures



Discomfort - with constant indoor temperatures

A fixed indoor temperature does not mean your customers will be comfortable. Tests show that if indoor temperature is *merely held constant* as the temperature outdoors falls, a person feels chilly and uncomfortable. This happens with ordinary temperature control systems, because as the walls of the home become colder they "draw" more heat from the body.



Comfort-with varying indoor temperatures

With Electronic Moduflow in the home, the colder it gets outside, the higher the temperature inside becomes. Colder walls are offset by this higher inside temperature. For example, when the outside walls grow colder, your customer may require 74° to feel comfortable. And previously he was comfortable at 71°. Electronic Moduflow solves this personal comfort problem automatically—and gives a wonderful new kind of comfort in the home.

MINNEAPOLIS-HO	NEYWELL	REGUI	ATOR CO.
Dept. AA-11-216,	Minneap	olis 8,	Minnesota

Gentlemen: Please have your representative show me your "Dealer Profit" program for Electronic Moduflow.

Name			
Address			-
City	Zone	State	



VOLUTIONARY ALL NEW SERIES 200

- HANDLES SUMMER AIR CONDITIONING OR WINTER **HEATING AIR PATTERNS WITH EQUAL EFFICIENCY**
- POSITIVE SHUTOFF
- AMAZING NEW SOLID SECTION LOUVER **DESIGN CURVED FOR SUPER AIR CONTROL**

Another Titus first. A high sidewall and ceiling grille test proven to handle the complex demands of modern heating and cooling. Stamped register designs simply cannot compete. Grille is so efficient it makes any forced air heating or cooling system perform with superior efficiency.

Don't jeopardize the performance of your heating or cooling installation with unflexible stamped registers. Install Titus high sidewall and ceiling grilles.

5 IMPORTANT APPLICATIONS

(1) FOR OVERHEAD FORCED AIR SYSTEMS (2) FOR HIGH SIDEWALL INSTALLATIONS (3) FOR REPLACEMENT OF OUTMODED WARM AIR REGISTERS WHEN COOLING IS ADDED (4) FOR REPLACEMENT OF INEFFICIENT OUTLETS IN PROBLEM AREAS TO CORRECT CHILLING OR UNCOMFORTABLE DRAFTS (5) FOR BRINGING IN OVERHEAD AIR CONDITIONING WHERE STEAM OR HOT WATER ARE PRESENTLY USED.

Underbid your competitors with these new 200 series grilles. Give customers quality that cannot be duplicated; air performance that is absolutely superior. Add to your immediate profit picture. Write for complete details now.

REVOLUTIONARY AIR DIRECTING PERFORMANCE ALMOST ELIMINATES DUCT COST IN OVERHEAD SYSTEMS



Geiling Frille

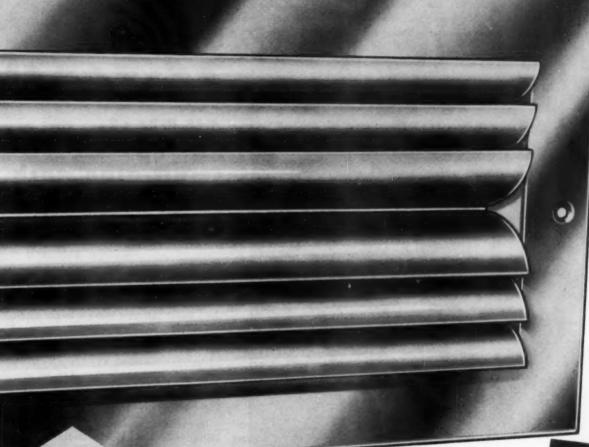


Diagram shows flexibility of 200 Series high sidewah and ceiling grille. Air may be directed along ceiling or forced down into the room proper at angle desired. Made for either 1, 2 or 4-way diffusion.

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TITUS, INC., WATERLOO, IOWA

Gentlemen: Please rush me complete new catalog, price lists and discounts on the new 200 Series Sidewall-Ceiling Grille.

Name

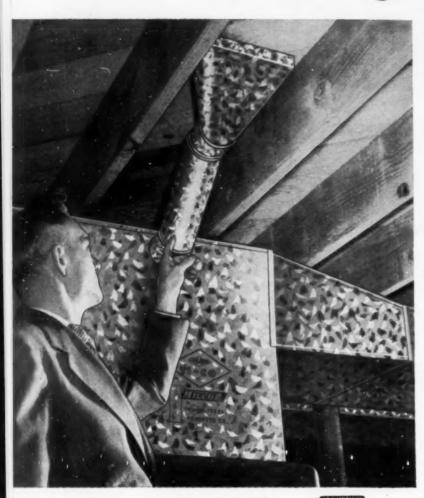
Company

Address

City

State

Galvanized is best for the job!



Milcor has a complete line of galvanized fittings for 4"-pipe systems



45° Takeoff



90° Ten Tekenti



90° Angle Be





Use MILCOR

4" Fittings on your small-pipe work

— says Calvin Droegkamp, Calvin Droegkamp Heating Co., 3813 W. Center St., Milwaukee, Wisconsin

Milcor fittings make it easier for you to install perimeter systems. You spend less time, do a better job, and make a larger profit.

First of all, Milcor 4" fittings are galvanized — and that means you get advantages like these: (1) Easier handling. (2) Lower installation costs. (3) An installation that doesn't snap, crackle, and pop when the temperature changes.

In addition, you have a complete line of Milcor Galvanized Fittings to choose from — including side and top takeoffs, various types of boots and accessories, such as floor register pans, casing collars, etc.

Like all Milcor fittings and accessories, these Milcor products are designed to give you snug, solid joints without special tools. You reduce installation time—make a better profit on every 4"-pipe job.

Prices on Milcor Furnace Pipe and Fittings are available from your nearest Inland Steel Products Company branch listed below, or from your heating jobber.

*Reg. U. S. Pat. Off.

INLAND STEEL PRODUCTS COMPANY

4023 WEST BURNHAM ST. • MILWAUKEE 1, WIS.
BALTIMORE 5, MD., 5300 Pulaski Highway — BUFFALO 11, N. Y.,
64 Rapin St. — CHICAGO 9, ILL., 4301 S. Western Blvd. — CINCINNATI 25, OHIO, 3240 Spring Grove Ave. — CLEVELAND 14, OHIO,
1541 E. 38th St. — DETROIT 2, MICH., 690 Amsterdam Ave. —
KANSAS CITY 41, MO., P. O. Box 918 — LOS ANGELES 58, CALIF.,
4807 E. 49th St. — NEW YORK 17, N. Y., 230 Park Ave. —
ST. LOUIS 10, MO., 4215 Clayton Ave.

Purchasing Power Going Up in U. S.

BECAUSE the purchasing power of the nation is in direct ratio to the size of its labor force, business men will be interested in the results of a study of U. S. Census Bureau figures recently completed by the research department of the National Association of Manufacturers. This study shows that almost 8 million persons have been added to the number employed at civilian jobs during the nine years since the end of World War II. The number of persons now employed in civilian jobs is 60.6 million - 7.8 million more than in 1945 and 1.9 million more than in 1949.

Upswing In Steel Industry Likely

me.

THE RECENT upswing in the price of iron and steel scrap indicates further increases in steel production, according to the Institute of Scrap Iron and Steel. Change in the price of scrap is considered by many as an accurate barometer of the state of the steel business, usually preceding a rise in production by two or three months, the institute states.

See Rise in Cost of Room Conditioners

THE COST of room air conditioners will not be less next year in the opinion of manufacturers attending a recent meeting of the Room Air-Conditioner Section of the Air-Conditioning and Refrigeration Institute. On the contrary, the consensus among the manufacturers was that instead of selling prices going down next year, it is quite likely that they will rise. The changing requirements of national codes and local ordinances will undoubtedly impose additional manufacturing costs which will be reflected in retail prices.

New Requirements for Homes Insured Under FHA Program

THE FEDERAL HOUSING Administration has recently issued a series of releases describing new requirements and regulations pertaining to various types of homes being insured under FHA's housing program. Listed below are some of the requirements that — directly or indirectly — affect the heating and air conditioning business.

• Minimum property requirements for homes built under the special low cost housing program — Minimum heating and other requirements for homes built under this program have been forwarded to FHA's 75 insuring offices. Homes built to sell under this program must meet three requirements other than the need for housing. They are: suitability of location, its appropriateness in regard to general community standards,

Management Course For Ohio Heating Dealers

A THREE DAY heating dealers' management course, sponsored by the National Heating Wholesalers Association. Inc., will be conducted by Ohio State University beginning November 21. Co-sponsors are six heating wholesalers in the Columbus. Ohio, area. Topics to be discussed include: Choosing the Correct Form of Organization, Looking at the Small Business, Customer Contracts and Financing Your Jobs, Proper Insurance for Heating Dealers, General Liabilities, Fire and Extended Coverage, Bonds, Ohio State Tax, Human Relations in Business, and Heating Dealers - Your Opportunity for Success. Forty-two dealers, selected by the co-sponsors, have been invited to attend. The registration fee of \$15.00 covers the course, texts and work sheets and mid-day meals.

and the impracticability of financing under FHA's standard single family home program. The homes must be adequate for year 'round occupancy and must comply with the established requirements for a single family residence under standard FHA regulations. The minimum property requirements for such homes are set forth in a 12-page booklet recently issued by FHA.

- · Builder's warranty for new homes - FHA now requires a builder's warranty before it will insure a mortgage on a new home. This requirement became effective on October 1. and applies to all commitments for mortgage insurance issued on and after that date on one to four family homes that are approved for mortgage insurance before construction starts. The builder or seller must warrant to the purchaser or owner that the dwelling is constructed in substantial conformity with the plans and specifications on which the FHA valuation was based.
- Cooperative housing regulations
 — Regulations designed to give added protection to the home buyer under the cooperative housing program require the builder, or other mortgagor, to submit a certification of the actual

(Please turn to page 22)

New Address For Artisan Cleveland Office

The Cleveland office of American Artisan has been moved to 737 National City Bank Building. New telephone number is SUperior 1-1291. Directing the activities of the Cleveland office is Robert A. Jack. Also representing the Artisan and working out of the Cleveland office is D. V. Mahan.

These Distributors Can Fill Your Viking Blower Package Order Today!

Danbury, Conn.
Nutmea Plumbing Supply Co. Hartford, Conn. Eastern Furnace Supply Co. Max Landerman, Inc.

New Haven, Conn. American Supply Co., Inc Heating Equipment Center

Waterbury, Conn. Harvey Molaver Co.

Dover, Delaware Dover Plumbing Supply Co., Inc. Wilmington, Delaware Stelwagon Manufacturing Co.

Aurora, Illinois Scott Wood and Metal Co., Inc.

Bloomington, Illinois
A. Y. McDonald Manufacturing Co.

Chicago, Illinois
Acme Furnace Fitting Co.
Armstrong Heating Supply Co.
Robert Barclay, Inc.
Excelsior Steel Furnace Co.
Inland Supply Co.

Decatur, Illinois Morehouse & Wells Co.

Elgin, Illinois Inland Supply Co. Galesburg, Illinois May Company

Joliet, Illinois Inland Supply Co. Midwest Supply Co. Quincy, Illinois K & P Heating Co.

Peoria, Illinois Champion Furnace Pipe Co.

Rock Island, Illinois Armstrong Furnace Supply Co.

Springfield, Illinois Booth & Thomas Material Supply Co.

Evansville, Indiana Am. Rad. & Std. San Corp. Ohio Valley Hardware & Roofing Co. Plumbers Supply Co.

Fort Wayne, Indiana Tri-State Heating Supply Inc.

Indianapolis, Indiana Capitol Furnace & Stove Repair Co. Triangle Sheet Metal Supply Co.

Lafayette, Indiana Biggs Pump & Supply Co. Logansport, Indiana Baker Specialty & Supply Co.

South Bend, Indiana Tiffin Art Metal

Terre Haute, Indiana Braden Manufacturing Co., Inc.

Burlington, Iowa A. Y. McDonald Manufacturing Co.

Des Moines, Iowa A. Y. McDonald Manufacturing Co. Heating Wholesalers Co.

Dubuque, Iowa A. Y. McDonald Manufacturing Co.

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Lexington, Kentucky Brock-McVey, Inc.

Louisville, Kentucky Plumbers Supply Co. Belknap Hardware and Mfg. Co. Stratton-Terstegge Co.

Baltimore, Maryland William A. Conway, Inc. R. E. Michel & Co. Roche & Hull, Inc.

Hagerstown, Maryland Noland Co., Inc. Western Maryland Supply Co.

Salisbury, Maryland Roche & Hull Inc. Boston, Massachusetts Waverly Heating Supply Co. Brockton, Massachusetts
Allied Wholesale Heating Supply Co., Inc.

Newtonville, Massachusetts Northeastern Equipment Co.

Quincy, Massachusetts Quincy Steel Supply Co. Somerville, Massachusetts Belco Distributors, Inc.

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Detroit, Michigan Semmler Wholesale Supply Co. Superior Safety Furnace Pipe Co.

Flint, Michigan Superior Safety Furnace Pipe Co.

Holland, Michigan Consolidated Distributing Co.

Utica, Michigan NuWay Supply Co., Inc.

Minneapolis, Minnesota
Globe Plumbing Supply Co.
A. Y. McDonald Manufacturing Co.

Hannibal, Missouri Central Plumbing Supply Co.

Joplin, Missouri Joplin Supply Co. A. Y. McDonald Manufacturing Co.

Kansas City, Missouri Furnace Supply Co. A. Y. McDonald Manufacturing Co.

St. Joseph, Missouri DeMuth Stove Repair Co. St. Joseph Furnace and Supply Co.

St. Louis, Missouri A. G. Brauer Supply Co. N. O. Nelson Co.

Omaha, Nebraska A. Y. McDonald Manufacturing Co. Roberts Supply Co. Manchester, New Hampshire Quiet Heet of New England, Inc.

Berlin, New Jersey Berlin Plumbing & Heating Supply Co.

Camden, New Jersey Stelwagon Manufacturing Co.

Trenton, New Jersey Jaeger Sales & Supplies Binghamton, New York W. A. Case & Son Mfg. Co. Northrup Supply Corp.

Buffalo, New York Allen Heating Supply Co.

Geneva, New York Northrup Supply Co. Gloversville, New York Treher & Jung, Inc.

Ilion, New York Northrup Supply Co.

Newburgh, New York Hagle Supply Co.

Newbury, New York Hagle Supply Co. Ogdinsburg, New York Utica Plumbing Supply Co.

Oneonta, New York Northrup Supply Co. Pleasant Valley Midway Burner Supply Co.

Rochester, New York John B. Davie Co. Rochester Oil Burning System

Utica, New York Central New York Supply Watertown, New York Hunting Supply Co.

Akron, Ohio Harpster Heating Supply The Merryweather Co. O'Conner Steel Co.

Alliance, Ohio Robertson Heating Supply Co. Canton, Ohio Irwin Steel Co.

Cincinnati, Ohio Cincinnati Stamping & Furnace Co. Hesco Corp. Quality Heating and Supply Co. The Williamson Heater Co.

Cleveland, Ohio
Decker Reichert Steel
Furnace and Boiler Parts Co.
Kinsner Supply Co.
Ohio Sanitary Specialty Co.
State Supply Co.

Columbus, Ohio Ohio Furnace Co. Squire Heating Supply Co.

Dayton, Ohio W. H. Kiefaber Co.

Hamilton, Ohio Roszel Heating Supply Co.

Lima, Ohio
Automatic Heating & Engineering
Lima Supply Co. Mansfield, Ohio Earnshaw Sheet Metal Co.

Martins Ferry, Ohio Stanton Heater Co.

Niles, Ohio Niles Sheet Metal Supply Co.

Painesville, Ohio Wettrick Supply Co. Portsmouth, Ohio Standard Supply Co.

Tiffin, Ohio Tiffin Art Metal Co.

Toledo, Ohio Perfection Furnace Pipe Co. Toledo Central Supply Co., Inc. Throm Supplies, Inc.

Youngstown, Ohio Banner Supply Co. Manufacturers Supply Co., Inc.

Zanesville, Ohio Sellars Wholesale Supply Allentown, Pennsylvania Pennsylvania Supply & Mfg. Co.

Erie, Pennsylvania Till Distributing Co.

Harrisburg, Pennsylvania Fuel Savers, Inc. Raub Supply Co. York Corrugating Co.

Indiana, Pennsylvania Indiana Wholesale Co. Lancaster, Pennsylvania Raub Supply Co.

Lebanon, Pennsylvania Lebanon Plumbing Supply Co.

Lewisberg, Pennsylvania Busser Supply Co. New Castle, Pennsylvania Smith Furnace Co.

Armer Funde Co.

Philadelphia, Pennsylvania
Acme Tin Plate & Roofing Co.
Berger Brothers Co.
Bryant Air Conditioning Corp.
The Carter Donley Co.
Hall & Carpenter
Stelwagon Mfg. Co.

Pittsburgh, Pennsylvania Bailey Farrell Co. Demmler Brothers Eckstein Co. A. H. Johnson Co.

Reading, Pennsylvania Stelwagon Manufacturing Co. Williamsport, Pennsylvania Raub Supply Co.

York, Pennsylvania York Corrugating Co. Bluefield, West Virginia Bailey Lumber Co. Bluefield Hardware Co.

Wheeling, West Virginia Karr Supply Co.

Green Bay, Wisconsin Metal Service, Inc.

Madison, Wisconsin Wisconsin Furnace Co. Manitowoc, Wisconsin

See The Complete Viking Blower Package Story On The Opposite Page

"Dealers Selling







Read what they have to say. Then check the opposite page for your nearest distributor". That recommendation from Dick Gang, Assistant Sales Manager of Viking Air Conditioning.

Viking's "300" Blower Package Line

Cat. No.	House Size Cubic ft.	Furnace Size	House Loss B.T.U.	C.F.M.
310	13,000	To 24"	75,000	900 to 1250
312	22,000	To 26"	130,000	1600 to 2000
314X	30,000	To 32"	185,000	2100 to 2750
316	36,000	To 34"	210,000	2600 to 3200
316X	40,000	To 36"	230,00-)	2800 to 3500

"They're A Pleasure To Install . . .

Viking's engineers proved they got out on the job with this line. There's plenty of working space inside the package and the square top opening makes for faster installation with either square or round

return air ducts". This approval of our blower design from Kenneth Werley of T-W Heating & Sheet Metal Co. in St. Louis, Mo.

"It's Easy To Sell Homeowners on Viking Blowers . . .

I start talking about winter air conditioning and how it makes any warm air heating unit produce even heat and cleans filtered air with a fuel saving of up to 34%. If they don't have a blower before they hear the Viking story, they usually buy". That's how Wes Solberg of Weichert Heating & Sheet Metal Works in Chicago, Ill. has increased his blower package business.

"No Servicing Problems With These Packages . . .

I don't have to make a service call to oil them with Viking's permanent grease bearings. And past experience has proved that Viking's design has the stuff that keeps homeowners happy. It's quiet and trouble-free". Those kind words from Edward Simonic of Lakeland Heating Co. in Wickliffe, Ohio.

Check Next Page For Your Nearest Distributor, Order These Fast-Selling Blowers Today!



Minimum Power Factors Specified For 1956 Window and Room Coolers

RECOMMENDED minimum power factors for room air conditioners are given in a report recently released by the joint committee on air conditioning and refrigerating equipment which is composed of representatives from the Air-Conditioning and Refrigeration Institute, Edison Electric Institute, and National Electrical Manufacturers Association. The report establishes recommended minimum power factor values based on unit size, calling for a minimum of 75 percent for 1/3 hp room air conditioners, 80 percent for 1/2 hp units, and 85 percent for 3/4 hp and larger. Power factors are to be measured at Underwriters' Laboratories maximum normal load test conditions -104 F db and 80 F wb on both sides of the unit and 120, 208, or 240 volts

Building Group Elects Stromberg Director

THE SHEET METAL contractors of Washington, D. C., have been receiving strong local and national support for their industry through Paul W. Stromberg, who is first vice president of the Sheet Metal Contractors' National Association, and who has worked with the National Joint Board for the Settlement of Jurisdictional Disputes for several years helping to iron out the differences in cases where work assigned the sheet metal union has been taken over by workers in other trades.

Mr. Stromberg has recently completed a four year term on the board of governors of the 1100-member Washington, D.C. Building Congress and as chairman of the membership committee of this association. Under his guidance, an all time annual record of 151 new members was set. Mr. Stromberg has been elected to the board of directors for a three year term.

(depending on the unit voltage rating) at the unit service connection. These recommended minimums are to be effective with 1956 models.

FHA Requirements Given For Home Modernization

(Continued from page 19)

cost at the completion of each management-type cooperative project. The provision is identical to that now applying to rental housing projects on which there are FHA-insured

- · Regulations covering modernization and repair - Regulations designed to protect FHA's home modernization and repair program against abuses and to safeguard borrowers from exploitation by unscrupulous salesmen or dealers became effective October 1. These regulations provide that lending institutions must bear 10 percent of the loss on any loan which is not repaid; that eligible items must "substantially protect or improve the basic livability or utility of the structure" on which the modernization is planned; and that dealer application and approval forms for all dealers active after October 1 must be in the files of the qualified Title I lending institutions before the lender purchases any Title I transaction from the dealer.
- Use of the term "FHA" in advertising In a letter addressed to all approved mortgagees, Title I lending institutions, builders, dealers and other business organizations participating in the FHA program, FHA calls attention to the statutory limitations upon the use of "Federal Housing Administration" or "FHA" in advertising material. FHA notes that many violations of the statute covering the use of such terms in advertising are caused by a lack of knowledge on the part of builders, dealers and manufacturers, either as

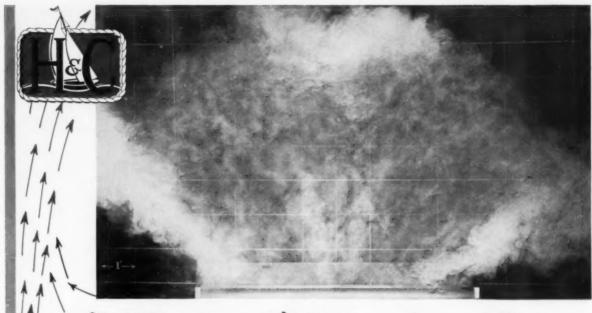
to the existence of the statutory prohibition or its scope and effect. The fact that property has been appraised and inspected by the FHA, the letter points out, does not authorize advertising statements such as "FHA Subdivision," "FHA Approved," or "FHA Accepted."

• Yield insurance - Commissioner Norman P. Mason has appointed a committee to explore the FHA program of vield insurance and make it work for the benefit of American families in the middle income group. Yield insurance, Mr. Mason explained, is entirely different from mortgage insurance. Under the plan, he said, an investing corporation owns an apartment house outright without any mortgage. Then the corporation may sell bonds to other investors and the FHA insures the yield. The committee is responsible for working out methods for developing the use of the yield insurance program to bring about volume production of rental housing for families of moderate income.

Commissioner Mason reports that the number of applications for insured mortgages on new and existing homes is steadily growing, and that the month of August set an all-time record for such applications received by FHA field offices. Approximately 53,800 applications were made in August, he said, of which nearly 21,700 were filed on older homes.

Bonadio Named Secretary Of AFL Building Trades

Frank A. Bonadio, international representative of the Sheet Metal Workers' International Association, was recently elected secretary-treasurer of the Building and Construction Trades Department of the American Federation of Labor. Mr. Bonadio succeeds Joseph Keenan, who has become secretary-treasurer of the International Brotherhood of Electrical Workers.



Settle For Nothing Less Than the perfect pattern, dirt-repelling airflow

OF H&C DIFFUSAIRES!

From the above photo of a smoke test of the H&C No. 44 continuous type DIFFUSAIRE, note how thoroughly the airflow blankets the wall for heating and cooling comfort, and the exceptionally high throw, so valuable in cooling. Then turn to the graph at the left which shows how the clean, filtered air coming from the DIFFUSAIRE hugs the wall, preventing the secondary, unfiltered air from touching it and thus minimizes wall streaking.

Each and every one of the DIFFUSAIRES in the H&C "Perimeter" line is engineered to provide this thoroughly clean and outstandingly efficient air pattern . . . a highly important element in gaining customer good will. Settle for nothing less! See them at your H&C Jobber or write for complete information.

NO. 44 SERIES CONTINUOUS BASEBOARD DIFFUSAIRE— Requires no tools to assemble or disassemble. For installation in multiples of 2' and 4'.



ASK YOUR JOBBER FOR
AN H&C "DIFFUSAIRE" AIR PATTERN DEMONSTRATOR.
IT'S A VALUABLE SALES TOOL.

Colored arrows indicate barrier of clean filtered air between the wall and secondary unfiltered air (black arrows).

This prevents impingement of dirt on wall.







H & C PROVIDES ALL TYPES OF PERIMETER DIFFUSERS



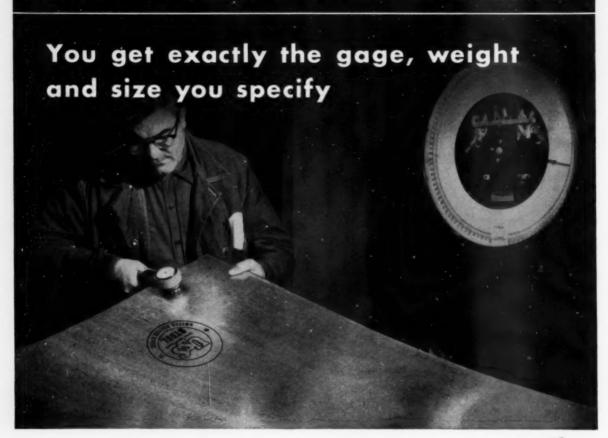


HART & COOLEY MANUFACTURING CO.

SOO EAST EIGHTH ST. HOLLAND, MICHIGAN

PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

WHY IT PAYS TO BUY SHEETS and STRIP FROM US



◆ You can be sure you'll get sheets and strip that are accurate to specification at any U. S. Steel Supply warehouse. Every order—large and small—is carefully checked before it leaves the warehouse to make certain that you will get the exact weight, gage and dimensions you specified.

You can't go wrong with quality at U. S. Steel Supply. All our sheets and strip are top-quality United States Steel products—produced under close quality supervision every step of the way. It's good to know, too, that your emergency orders (to complete production runs) can be quickly filled by U. S. Steel Supply with the exact quality and specifications you need. You don't have to waste valuable production time if you run out.

Call us for: hot rolled, cold rolled, Vitrenamel, galvanized, galvannealed, corrugated, and long terne sheets; hot rolled or cold rolled strip.

TRIPLE

What you want When you want it At the right price

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" General Offices
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Warehouses and Sales Offices



UNITED STATES STEEL

are you Always

LOW

surely not

... when you justify your actual overhead and your real net profit!
So ... in order to successfully close your sale you must justify the difference in price to your prospect.



BVICTORF

Dealers Are Doing This.

FURNACE WITH THE HEAT RADIATING FINS



Yes... we can prove to you that VICTOR dealers are doing just this! They close more sales... at bigger profits. BECAUSE... they are handling a line famous for quality, with patented fuel-saving FINS which give the owner more real heating comfort at a 20% to 30% saving in fuel. Other features of genuine merit, plus a 15-year warranty, clinch sales. Get out of the competitive class with VICTOR!

HALL-NEAL FURNACE CO.

Quality Furnaces Since 1890 1322-42 N. CAPITOL AVE. INDIANAPOLIS 7, INDIANA HALL-NEAL FURNACE CO.

1322-42 N. CAPITOL AVE., INDIANAPOLIS 7, INDIANA

Please give me details at once of VICTOR Gas, Oil and Coal line, and the extra profits I can make with an EXCLUSIVE VICTOR franchise.

NAME

PIKM

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PRODUCTS ARE SETTING NEW

THE NEW AND IMPROVED . . .

No. 180 BASEBOARD PERIMETER DIFFUSER

New Irredom of installation never before possible is now yours with the NEW No. 150 Baseboard Diffuser. Install it on rough or finish floors, either before or after plastering; the face is removable at all stages of construction. Time-saving knock-out sections lower installation costs and make it a simple matter to fit the diffuser over the duct outlet. By supplying the damper as a separate, optional unit to be installed only where needed, Air Control makes possible extra savings of 1/2 or more on the cost of dampers. For cominuous installations use convenient connector kits plus aside and outside corner fillers.

Perimeter

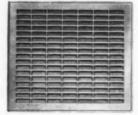


No. 15 SIDEWALL DIFFUSER

The unique flared face design sends a blanket of air over cold walls without annoying drafts. Curved valve design and center turning vane hold resistance to a minimum. Adjustable stop makes balancing at the face simple and fast. Newly designed matching frame adapts the No. 15 Diffuser to baseboard installation.

No. 42 FLOOR DIFFUSER

Four decorator styled models with either $2\frac{1}{4}$ " or 4" wide opening. Seamless, one-piece face with curved adjustable vanes. Streamline valve assures excellent diffusion at all settings. Set-screw adjustment, easily reached from face, simplifies balancing.



No. 333 RETURN AIR GRILLES

The perfect answer to the problem of centralized returns. Rugged, low-cost and good looking — available in a wide range of sizes. Easily installed in ceilings, walls or doors.



SEE YOUR LOCAL JOBBER OR WRITE FOR THE COMPLETE AIR CONTROL CATALOG AND PRICE LIST — NO. 54-AC. EFFICIENCY, ECONOMY AND SATISFACTION ARE ASSURED WHEN YOU SPECIFY AIR CONTROL.

Air Control PRODUCTS, INC.

RECORDS FOR PERFORMANCE AND ECONOMY



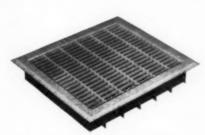


CEILING DIFFUSERS

Attractive step-down and flush type models are available in sizes from 6" to 22". The air flow rings present a minimum resistance and allow rapid air diffusion. Dampers, both butterfly and single-valve type, have an efficient chain control which simplifies balancing the system.



Where price is paramount and quality must be maintained here is the register. Vertical fins (may be adjusted with key) give complete horizontal air control. Single damper with adjustable stop permits balancing system at register face. Matching Grilles available.



available.

mines the air deflection up,

straight or down. Vertical fins

are adjusted (with an adjust-

ing key) to give any desired

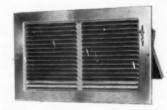
horizontal deflection. Models

for sidewall and baseboard

installations. Matching grilles

No. 40 SERIES FLOOR REGISTERS AND RETURN AIR FACES

Patented Rigid-Lock construction provides a firm walking surface for either home or commercial installations. Registers have foot-operated dial to control air flow. Both come in complete size ranges and are available in Oak or metalescent finish.



No. 210 SERIES REGISTERS AND GRILLES

Similar to the No. 110 Series above, but provides complete vertical control of air stream. Both series are available in a wide range of sizes from 10" x 4" to 30" x 8" in register or grille and for sidewall or baseboard mounting.

PRESENTED HERE ARE BUT A FEW OF THE FAMOUS LINE OF AIR CONTROL PRODUCTS FOR HEATING, VENTILATING AND AIR CONDITIONING. BE SURE THAT YOU HAVE THE LATEST AND COMPLETE INFORMATION. YOUR JOBBER CAN SHOW YOU THE COMPLETE LINE.

Air Control
PRODUCTS, INC.
Dept. A · COOPERSVILLE, MICH.



"UNI-FLO" ENGINEERED

Air Distribution

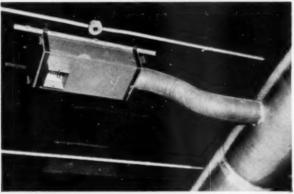
... at Hudson's in Northland Center

Close collaboration between consulting engineers, architects, store executives, air conditioning contractor, and the Barber-Colman laboratory staff has brought about one of the world's largest shopping center installations . . . at The J. L. Hudson Company's massive new branch store in \$25,000,000 Northland Center, Detroit, Hudson's basement alone covers 18 acres, and the enclosed floor area totals 486,205 square feet. The entire store is air conditioned including selling areas, restaurants, lounges, offices and service departments.

Architects and Engineers, Victor Gruen Associates, General Contractor, Bryant & Detwiller Co., Air Conditioning Contractor, Carrier Corporation, Mechanical Contractors, Donald Miller Company



Contemporary design prevails throughout the world's largest suburban department store, exemplified by this view taken from the West Terrace. Complete edifice is air conditioned the year 'round for shapping comfort.



Uni-Flo Control Unit, suspended from ceiling, has flexible connection to branch duct. Control unit reduces pressure from approximately 6" to 8" H₂O down to low pressure for efficient distribution through diffuser.



Emphasis on beauty with practicality is the keynote throughout 186 merchandise departments. Note how the Uni-Flo Square Ceiling Diffusers blend harmoniously with the acoustical ceiling.



Wide angle view of part of trunk ducts in the fan room, connecting to air shaft at rear. Nearly eight miles of duct-work are required to carry conditioned air for just the first two floors.

BLAZING THE TRAIL TO BETTER AIR DISTRIBUTION



First with complete laboratory facilities . . .

When Barber-Colman entered the air distribution field nearly 20 years ago, laboratory facilities were established to simulate every

possible condition of air distribution. From this laboratory has come reliable selection data... and many of the industry's pioneering developments. Based upon years of laboratory research, plus field experience, Barber:Colman has the equipment and engineering "know-how" to help you design and install space-saving high velocity equipment for highly satisfactory results. Get latest data from our nearby Field Office (consult telephone directory), or write us. Our facilities and job-proved techniques are at your disposal.

BARBER-COLMAN COMPANY

Dept. K, 1106 Rock St., ROCKFORD, ILL., U. S. A. Field offices in principal cities

Air Distribution Products • Automatic Controls • Industrial Instruments

Aircraft Controls • Small Motors • Overdoors and Operators • Molded

Products • Metal Cutting Tools • Machine Tools • Textile Machinery



Washington Letter

Apprentices Needed to Meet Population Growth

By Arnold Kruckman

THE LATEST REPORT of the executive committee on apprenticeship for the construction industry discusses progress that has been made in the development of area-wide joint apprenticeship systems. Although comprehensive statistics are not available, it is known that at least 3285 area-wide joint apprenticeship systems have been established in the United States, including at least 247 programs for sheet metal workers. Statistics were also provided concerning the number of registered apprentices in every state except New York. The most recent report shows that on June 30, 1954, there was a total of 77,436 registered apprentices in the construction trade, including 8159 sheet metal worker apprentices. During the preceding three months the sheet metal worker programs had 671 new apprentice registrations, 385 completed their training, and apprenticeship programs were discontinued by a total of 441 apprentices, many of whom entered the armed forces.

Employment Appeal of SM Industry

Authorities point out that sheet metal workers' IQ's are among the highest in the various trades, and a follow-up study reveals that they maintain a high degree of professional proficiency and integrity and remain in the business for which they indentured — a large number of them become proprietors and operators of their own businesses. A follow-up study of the current employment of former apprentices, who did not complete their apprentice-training programs, showed that a considerable proportion are working in the trade to which they were apprenticed, or in closely related occupations. It was found that about 38 percent of former apprentices are employed in the same trade in which they were apprenticed — and another 13 percent in closely related trades.

The bulletin issued by the Executive Committee on Apprenticeship gave a history of the difficulties involved when deciding what is a skilled occupation and who is a skilled worker. It is interesting that this document shows how the numbers in trades, such as the sheet metal work-

ers, has grown during the past fifty years. It shows the areas where they are located and gives the average age of workers, and gives interesting comments on the occupational distribution of the skilled labor force. There is a good deal of interesting information about the educational level of skilled workers, and it tells of the percentage of craftsmen who are self-employed. There is information about the average income of workers in the trade, and something about the distribution of the trades through the various industries. It is interesting to find there are 247 local unions of sheet metal workers in forty-four states — all this, exclusive of the railroad sheet metal workers.

In the latest construction trades summary, issued by the Bureau of Apprenticeship of the Department of Labor, the following statistics were provided concerning the number of registered sheet metal apprentices currently in training in each state:

Alabama — 115; Alaska — 6; Arizona — 84, Arkansas -14; California - 1185; Colorado - 192; Connecticut 269; Delaware - 21; District of Columbia - 82; Florida — 182; Georgia — 186; Hawaii — 40; Idaho 37; Illinois — 513; Indiana — 219; Iowa — 117; Kansas — 65; Kentucky — 126; Louisiana — 119; Maine — 10; Maryland — 78; Massachusetts — 226; Michigan — 493; Minnesota — 333; Mississippi — 29; Missouri — 287; Montana — 47; Nebraska — 62; Nevada - 10; New Hampshire - 0; New Jersey - 270; New Mexico - 18; New York - not reporting; North Carolina - 172; North Dakota - 0; Ohio — 774; Oklahoma — 107; Oregon — 145; Pennsylvania — 267; Puerto Rico — 0; Rhode Island - 33; South Carolina - 45; South Dakota - 12; Tennessee - 134; Texas - 287; Utah - 84; Vermont — 5; Virginia — 148; Washington — 162; West Virgina - 59; Wisconsin - 258; Wyoming

California had the largest number of registrations with 1185 starting their apprenticeship. Ohio came next with 774 registrations with 10 cancellations; then came

WASHINGTON LETTER-

Illinois with 513 registrations, and eight cancellations and next Michigan with 493 registrations and 24 cancellations. There are eight states with less than 300 registrations. These are Connecticut, Massachusetts, New Jersey, Pennsylvania, Texas, Indiana, Missouri and Wisconsin.

Apprenticeship in Other Trades

The summary shows the largest number of apprentices are in the carpenters' trade, 20,541; next come the plumbers and pipe fitters trade with 17,102; and following them come construction electricians which have 14,701 registered apprentices. Thereafter come the sheet metal workers with 8038. The trade with the least registered apprentices is that of the construction glaziers with 641.

Businessmen in the sheet metal, warm air heating and air conditioning industries will receive from the Bureau of the Census towards the end of this year or early next year the documents upon which they are expected to report operations individually for 1954. Congress has provided for Censuses of Business, Manufactures and Mineral Industries an appropriation of \$8,430,000. This is in addition to the appropriation of \$16 million which it has provided to pay for a new Census of Agriculture. All these Censuses will be based upon statistics compiled for states, counties and cities of 10,000 or more population. Incidentally, the first Census of this kind was taken in 1809; and most recently in 1947. This series of Censuses is designed to be as complete and as useful as any ever heretofore assembled. The Census of Manufactures is to cover the operations of more than 300,000 - almost 400,000 - establishments, practically including every organization of any kind that produces anything and which is engaged in employing people on its payrolls and which uses fuel, power, materials and other important items.

The 500 different kinds of industries listed emphasize the activities of sheet metal manufactures, production of warm air heating and air conditioning equipment of various types. It will probably be the most complete census of these industries yet undertaken. Congress, as well as the Bureau of the Census, points out that the statistics obtained are those upon which public officials in government agencies, such as the Bureau of Labor Statistics and the Federal Reserve Board, must rely heavily in computing their own vital current indices of activity.

The Bureau of Census stresses that economic intelligence, using the word "intelligence" in the military sense, was never more essential to the successful functioning of a competitive private free enterprise economy than it is today. Director Burgess feels the soundness of government policy decisions and private business plan-

ning depend upon the availability of accurate and adequate statistical information. These regular censuses are regarded by the government agencies as direct sources of statistical information on our society and on our economy, and also as the indispensable benchmark for the calculation of such key economic indicators as gross national product, national income and the operation of individual parts of the economy.

Jobs and the Population Shift

In connection with the pending census it is interesting to learn that one-sixth of all non-manufacturing jobs in the whole country are now located in California and Texas; and California outstandingly leads the nation in the number of construction workers. It is pointed out that there are two types of population shifts, now actively in progress; one surges from the cities to the suburbs. the other surge is the shift in population from one city to another; this move in general is toward the west and the south. It is rather startling to find that more of the shift is specifically to the south rather than west. The various government agencies emphasize that all these shifts are creating an expanding demand for new utilities, new transportation facilities, new schools, churches, shopping centers and homes - either apartments or other types of dwellings. The Bureau of the Census tells us its figures show clearly there is a drift from the farms to the cities and then from the cities to the suburbs; and that while the trend westward is the over-all trend, the general trend is to the south and that people are going south faster than they are in any other direction for specific settlement.

Rate of Population Growth

It is particularly interesting to learn that The Bureau of Census finds there is a birth every eight seconds; and a death every 19 seconds. It figures that the net gain in the birth rate is one new life every eleven seconds; and that there are over 7000 new mouths to feed every morning of the year. These figures apply solely to the United States.

The last census statement reported that the total population, including Armed Forces overseas, was 162,-414,000. The civilian population was estimated as 159,-084,000. The increase was about 11,282,000, or 7.5 percent, since April 1, 1950, the date of the last census; and an increase of 2,785,000, or 1.7 percent, over the estimate for the corresponding month a year ago. Incidentally, an increase in the birth rate is calculated at figures that even the Bureau of the Census does not wish to give out until it has had further statistical computation.

In early August it was estimated that there were



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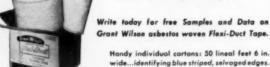
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62,300,000 persons employed, and that 3,245,000 were unemployed. The figures had not changed much for some months. A joint statement by the U.S. Department of Commerce and the U. S. Department of Labor estimated non-farm payrolls by the first of September at an excess of 48,000,000 persons. During the same period unemployment covered by state unemployment insurance systems declined to 1,676,800. The decline in insured unemployment was widespread, with forty-two states reporting a drop. Among the large industrial states the sharpest reductions were reported in New York, New Jersey and Illinois. Only two industrial states, Michigan and Indiana, showed an increase in insured unemployment primarily because of layoffs in automobile plants and some aircraft establishments. In the Dakotas insured unemployment was less than 1 percent of covered employment. The rate for West Virginia, 10.1 percent, was still the highest in the nation, followed by Kentucky 9.9 percent and Rhode Island 8.8 percent.

Five States Losing Population

Again depending upon the Bureau of Census for the facts, it is interesting to find that the states losing population between 1950 and 1954 have been reduced from twelve to only five, those losing being West Virginia, New Hampshire, Iowa, Vermont and Arkansas. It is not so difficult to understand the decline in West Virginia which has had a terrific economic setback by reason of the products it supplies having encountered competition from various foreign sources. This competition has cut deep into the economy of the state. New Hampshire has been losing population for some years as has Vermont. But the loss of population in Iowa and Arkansas is a puzzle to those in the Bureau of Census.

Population growth has been particularly rapid in states whose climate makes them attractive from the standpoints of health, retirement and recreation. These include Nevada, Arizona, Florida and California. Among the territories and possessions only Alaska has grown more rapidly than continental United States. It is the only one of such areas that has had an increase in its population. In five of the forty-four states that gained population between 1950 and 1954, net total in-migration accounted for more than half the total gain. In the five states that lost population, the net total out-migration exceeded the natural increase, generally a substantial number in itself.

Although only five states declined in total population, there were twenty-nine states and the District of Columbia for which migration out of the state exceeded migration into the state. In seventeen of these states the rural population in 1950 was more than half the total population, and in five more only slightly less than 50 percent of the population was rural. This association between net migra-



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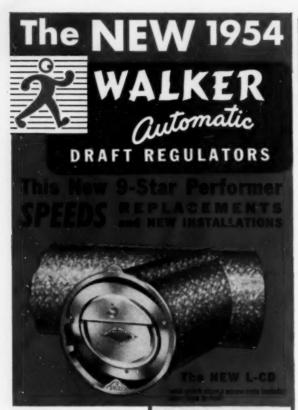


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tory loss of population and the rural character of the states was lacking in seven states and the District of Columbia. The states with a net in-migration between 1950 and 1954, with the exception of Virginia, were those in which more than 50 percent of the population was living in urban areas in 1950.

Re-defining an Employer

Shortly before Congress went its way Chairman Reed of the Ways and Means Committee introduced H.R. 9709 which was designed to re-define an employer in relation to unemployment compensation. Congressman Reed introduced the bill at the request of the Administration. It provides that any person paying wages to more than three persons must provide them with unemployment compensation insurance. The present limit is eight or more. The bill would give coverage to 1,500,000 more civilian industrial employees and cover another 2,500,000 Federal employees. Further details will be available in the next session of Congress.

Build-up in Defense Preparations

Charles P. Redick, Chief, Building Materials and Construction Division of the Business and Defense Services Administration, feels encouraged about the manner in which industrialists, especially those engaged in the production of sheet metal products, are awakening to the need for protective and defensive organizations in their own businesses and in their communities. Recently he has had the stimulating effect of a visit from several sheet metal people who came voluntarily in order to discuss the problem.

Mr. Redick feels the initiative for the organization of the defensive and protective preparation should come from the business people themselves. He says there is no doubt they will undertake any job assigned them by Gov-

Mr. Redick believes that other business men and industrialists should follow the example of the sheet metal people who recently called on him to discuss the problems. He further believes an industry should do its own organizing at the plant level, and then probably extend its work, either to the whole community or to that part of the community in which it is most interested. Those interested might begin activity by contacting the Government officials in Washington who are competent to give them the essential information needed. He points out that in those areas where such preparations have been made, and where the hurricanes and other upheavals of nature recently were so tragically destructive, there was less damage because there was more preparation for what happened. Mr. Redick expects a number of conferences to be held in different parts of the country during the coming months, as well as in Washington.



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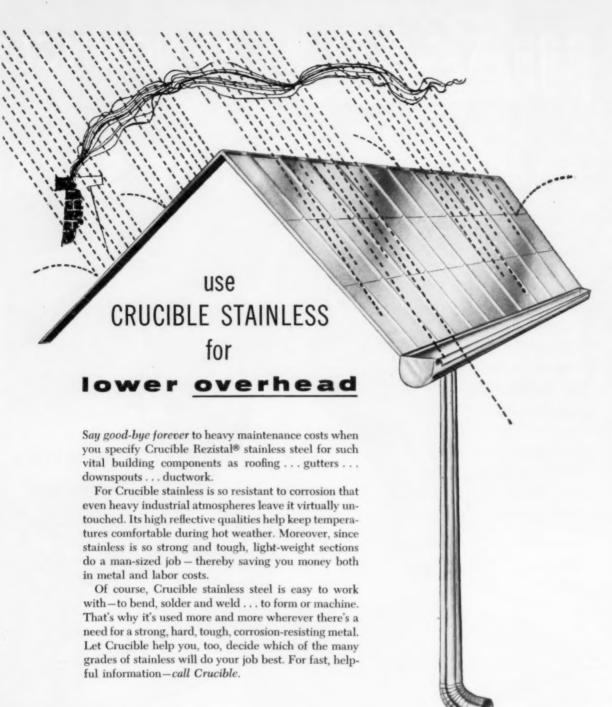
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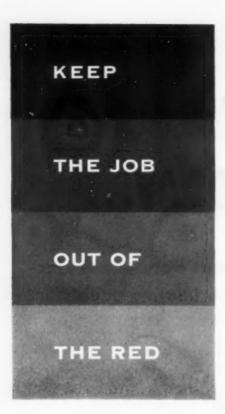
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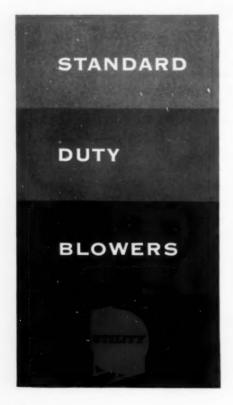
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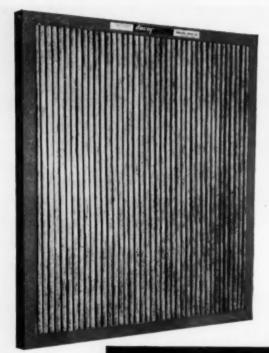
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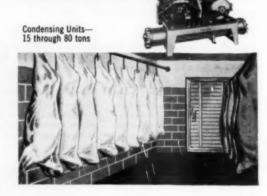
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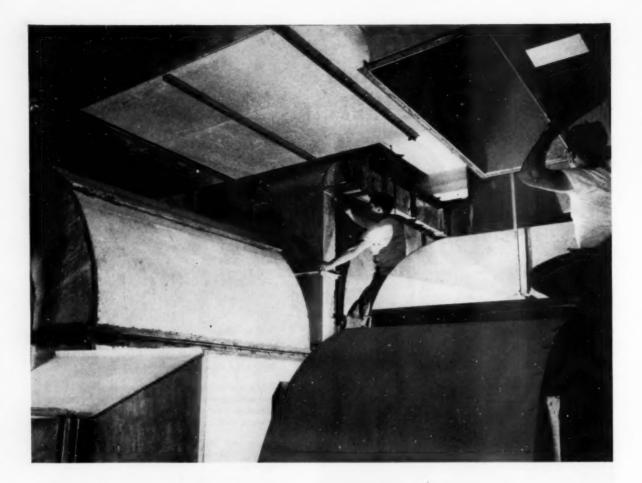
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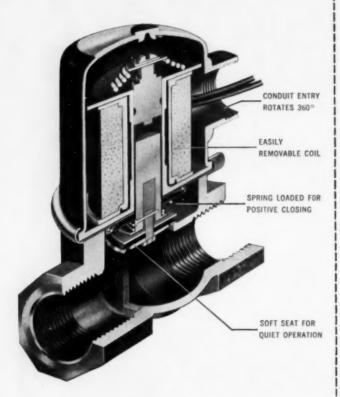


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General Controls' K-3A magnetic gas valve is a better valve because it's easy to install and easy to maintain, with full-rotating conduit connecting device and removable coil. Quiet in operation and heavily spring-loaded for positive closing, the versatile K-3A is adaptable to any commercial voltage or frequency and operates on any type of fuel gas, including LP-G and sour gases. A product of sound engineering and painstaking workmanship, this high-capacity all-service magnetic gas valve is the accepted standard for gas fired appliances.



GENERAL CONTROLS

Glendale, California • Skokie, Illinois

Manufacturers of Automatic Pressure, Temperature, Level and Flow Controls for Heating, Home Appliances, Refrigeration, Industrial and Aircraft Applications.

FACTORY BRANCHES IN 36 PRINCIPAL CITIES

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A better magnetic gas valve... you can see and HEAR





General Controls Heating Controls Catalog 53H . . . a comprehensive, easy-to-understand summary of 76 automatic heating controls—the most complete line available today. Send for your copy. No charge, of course.



WHAT THE ASSOCIATIONS ARE DOING



SHARING HONORS for the annual trophy are Ray Hubbs and Gunnar G. Olsenius (center). Runners-up were Mel Jackson (left) and Frank Schroeder (right)



PRIZE WINNER for the day, Art Schultz, looks over the large selection of prizes to be awarded during the evening

Chicago Association Holds Season's Third Meet

MEMBERS OF the Chicago Warm Air Golf Association, representing the contracting, wholesaling and manufacturing fields, meet three times each summer — each with the hope of winning the annual silver loving cup awarded to the golfer who has the two lowest net scores. This year there was a tie between Ray Hubbs and Gunnar G. Olsenius (Mr. Olsenius was last year's trophy winner). Mel Jackson and Frank Schroeder tied for second place.

The tournament was held at the Ruth Lake Country Club, Hinsdale, Ill., and was attended by 58 members and their guests. Prize winners, in order of scores (computed by the adjusted scoring system), were announced by W. J. Pennington, chairman of the awards committee, as follows:

Low Net

A. Schultz — Briggs & Turivas
Gunnar Olsenius — U.S. Steel Co.
Mel Jackson — Grant Wilson, Inc.
Charley Bennett — Armstrong Heating Supply Co.
M. Primich — Gary Steel Products Co.
George Anderson — Condensation Engineering Corp.
Chas. E. Price — American Artisan
F. Schroeder — Illinois Iron & Bolt Co.
George Bunt — Jones Sheet Metal Co.
Bob Ingeman — Peoples Gas, Light and Coke Co.
Ray Hubbs — Park Ridge, Ill.
R. Olson — Barney Olson Co.
E. H. Frick — Elgin, Ill.
H. N. Anderson — River Forest, Ill.
R. H. Blackstone — La Salle National Bank

Len Miller — HubAire Inc.

Jack Demling — Air Conditioning Contractors' Alliance

E. A. Berg — Alladen Engineering Co.

Otto Zeman — Barney Olson Co. Arthur McLain — Jones Sheet Metal Co. Lars Schulein — L. E. Schulein Co.

F. Meunier - Jones Sheet Metal Co.

Larry Ingham — Aire-Flow Heating Co.
W. Pennington — Dole Valve Co.
T. Johanson — Central-West Machinery Co.
L. Solstad — Austin Sheet Metal Works
Harry Himelblau — Himelblau Associates, Inc.
H. A. Ziehm — H. A. Ziehm Co.
Blind Bogey

I. F. Vicha — Robinson Furnace Co. Harry Himelblau — Himelblau Associates, Inc.

A, H. Burkhardt — Alladen Engineering Co. G. G. Olsenius — U.S. Steel Co. R. H. Blackstone — La Salle National Bank

Study Business Administration

At the request of the Detroit Warm Air Heating Association, Wayne University, Detroit, has established a course in business administration for warm air heating dealers and sheet metal contractors. The association tells its members, "The instructors are ordinary business men, like yourselves, who will discuss the problems involved in running a small company in terms easily understandable to the average small business man." The course comprises 10 evening sessions, fee for which is \$15.00.

Clark Resigns from Canadian Group

T. A. CLARK, technical director of the Canadian chapter of the National Warm Air Heating and Air Conditioning Association, has resigned from the chapter to accept an executive position with a warm air heating manufacturer. Mr. Clark is well known for his work with the chapter, particularly in relation to the operation of the 48 schools held throughout the country during the past four years.

Tri-State Governing Boards Meet

THE GOVERNING BOARDS of the Roofing and Sheet Metal Contractors' Association of Florida, the Carolinas Roofing and Sheet Metal Contractors' Association and the Roofing and Sheet Metal Contractors' Association of Georgia held their third annual joint meeting at the Piedmont Inn, Waynesville, N. C. Principal speaker was Dee Cramer, president, Sheet Metal Contractors' National Association. Among the topics scheduled for discussion by the governing boards were: warm air heating and air conditioning codes; labor relations; mechanical tools; sales tax laws; lien rights; new members; proper appli-

cation of residential year 'round air conditioning; and improvements in bidding procedures. Following the business meeting, Leroy Still, president of the Georgia association, extended an invitation to the governing boards to hold the fourth annual joint meeting at Savannah. The invitation was accepted, and the dates of September 16 and 17, 1955 were chosen for the meeting.

Peoria, III. Groups Join Forces

THE PEORIA sheet metal contractors' association has joined with other contractor groups in the area to form

(Please turn to page 131)

Coming Events

- Nov. 29-30—National Warm Air Heating and Air Conditioning Association, board and committee meetings. Cleveland Hotel, Cleveland. George Boeddener, Managing Director, 145 Public Sq., Cleveland 14.
- Dec. 1-2—National Warm Air Heating and Air Conditioning Association, annual convention. Cleveland Hotel, Cleveland. George Boeddener, Managing Director, 145 Public Sq., Cleveland 14.
- Jan. 20-22—National Heating Wholesalers
 Association, Inc., annual convention.
 Bellevue-Stratford Hotel, Philadelphia. C.
 Stuart Rambo, Executive Secretary, 228
 N. LaSalle St., Chicago 1.
- Jan. 23-26—New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association, Inc., annual convention. Mark Twain Hotel, Elmira, N. Y. Clarence J. Meyer, Secretary, 567-69 Genesee St., Buffalo.
- Jan. 24-27—American Society of Heating and Ventilating Engineers, 61st Annual Meeting. Bellevue-Stratford and Benjamin Franklin Hotels, Philadelphia. A. V. Hutchinson, Secretary, 62 Worth St., New York 13.
- Jan. 24-28—International Heating and Ventilating Exposition—the Air Conditioning Exposition. Commercial Museum, Philadelphia. Managed by the International Exposition Co., 480 Lexington Ave., New York 17, and sponsored by the ASHVE.
- Feb. 3-4—Sheet Metal & Warm Air Heating Contractors' Association of Indiana, annual convention. Hotel Severin, Indianapolis. Frank E. Anderson, Secretary, 439 S. 17th St., Terre Haute.

- Feb. 10-12—Sheet Metal Contractors Association of Minnesota, annual convention. Hotel Lowry, St. Paul. H. T. Helle, Secretary, 531 Rice St., St. Paul 3.
- Feb. 24-25—Michigan Heating & Sheet Metal Association, annual convention. Bancroft Hotel, Saginaw. N. J. Biddle, Secretary, 3035 E. Grand Blvd., Detroit 2.
- Feb. 28-Mar. 2—Ohio Sheet Metal Contractors' Association, annual convention. Sheraton-Gibson Hotel, Cincinnati. William C. Lumm, Secretary, 2512 Albion St., Toledo.
- Mar. 7-9—Sheet Metal Contractors' Association of Wisconsin, annual convention. Hotel Schroeder, Milwaukee. Robert Schmieder, Secretary, 225 E. Michigan St., Milwaukee.
- Mar. 25-26—Sheet Metal, Air Conditioning & Roofing Contractors' Association of Pennsylvania, annual convention. Brodhead Hotel, Beaver Falls. Earl W. Liebermann, Secretary, 1411 Merchant St., Ambridge, Pa.
- Apr. 19-21—Oil-Heat Institute, annual convention. Conrad Hilton Hotel, Chicago. R.
 H. L. Becker, Managing Director, 500 5th Ave., New York 36.
- Apr. 24-27—Sheet Metal Contractors Association of Illinois, Inc., annual convention. Pere Marquette Hotel, Peoria. Jay E. Harms, Secretary, 1619 N. Sheridan Rd., Peoria.
- Apr. 27-30—Sheet Metal Contractors' National Association, annual convention.
 Mark Hopkins Hotel, San Francisco. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

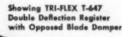


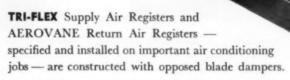
TRI-FLEX and AEROVANE REGISTERS

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Opposed Blade Dampers

KEY OPERATOR FOR OPPOSED BLADE DAMPER Blades are regulated by key operator which may be removed or tapped permanently into place.





This improved damper unit insures uniform distribution of air over the entire face of the register . . . and provides positive damper setting in any position from fully open to fully closed regardless of system pressure. Set in a rigid steel frame, blades are formed for extra strength and stiffness, and overlap when closed, eliminating any possibility of air leakage. Blades are regulated through the face of the register by means of a key operator which may be removed or tapped permanently into place.

For complete information and size selection data for TRI-FLEX and AEROVANE Registers and Grilles, write for a copy of Catalog No. 200.



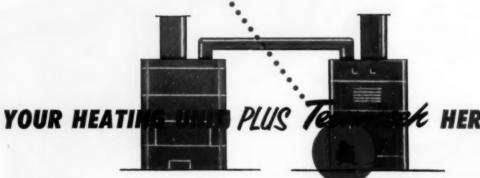
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DESIGN "YEAR-ROUND" AIR CONDITIONING



HERMETIC

With the introduction of Tecumseh's new line of large hermetics, your engineers can now design a summer air conditioning unit that can be sold as a package unit with your present line of oil or gas fired winter air conditioners.

Designed right and priced right these Tecumseh completely sealed Twin Cylinder Hermetics are available for 1, 1½, 2 and 3 H.P. applications. The Tecumseh hermetic, in a properly designed system, assures you of the most economical and efficient system available.

Economy, freedom from service problems and

efficiency are some of the reasons why the Tecumseh Hermetic is incorporated into the majority of room coolers. These same advantages apply to the integral H. P. compressors for year around applications.

Why not get a head start in this new market by offering your dealers a complete . . . heating and cooling . . . air conditioning unit?

Our Tecumseh representative in your territory will be pleased to give you all the facts about these Tecumseh Hermetics, simply write or call us today and he will contact you immediately.



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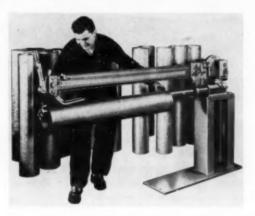
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EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For additional product information which is available, see this month's New Literature department.

Power Groover

MODEL 48-U POWER GROOVER with interchangeable horns and rolls built for closing both single lock and Pittsburgh lock seams — Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11. Unit has a nominal working length of 48 in. and is equipped with adjustable stops to hold work stationary on the horn.



Rolls are mounted in swinging cradles to permit front roll engagement on outstroke and rear roll engagement on return. Adjusting wheels enable close regulation of roll pressure to conform with thickness of material. The single lock seaming horn can be rotated and locked in any one of three positions for grooving inside seams or turned to flat side for grooving outside seams. Widths of grooves in the rolls and horn for single lock seaming are $\frac{3}{8}$ in., $\frac{1}{2}$ in. and $\frac{5}{8}$ in., while the horn for Pittsburgh lock seaming has a $\frac{7}{16}$ in. groove width.

Gas or Oil Highboy Furnaces

SERIES 541 OIL OR GAS fired highboy winter air conditioners — Thatcher Furnace Co., Centre St., Garwood, N. J. Units are factory assembled, and rated at 79,200 Btu output at the bonnet.

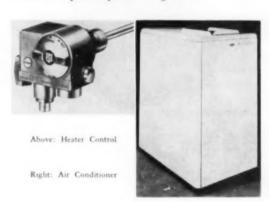
Single Phase Capacitor Motors

"TRI-CLAD 55" SINGLE phase capacitor motors featuring higher full load speeds, higher overload capacity and higher breakdown torque — General Electric Co., Schenectady 5, N. Y. Motors incorporate a new insulation system, bearing assembly and ventilation design for greater efficiency. The transfer switch is a totally enclosed, snap-action switch with contacts protected from foreign matter to assure positive contact, accord-

ing to company engineers. A fiber terminal board allows the single phase motor to be changed from 115 volt, 60 cycle to 230 volt, 60 cycle operation. Also, the reversing of the motor's direction of rotation can be effected by selecting a combination of lead connections. Motors are available in ratings of from 1 to 5 hp.

Water Heater Control

WATER HEATER CONTROL that combines lighting, reset and temperature adjustment in a single control dial — General Controls Co., 801 Allen Ave., Glendale 1, Calif. Known as model G-5, the single dial control includes both the lighting sequence and temperature adjustment, plus a safety feature designed to keep the main burner off until the pilot is properly lighted. The control provides 100 percent safety shutoff of both pilot and main line gas in the event of an unsafe lighting condition or pilot failure, the manufacturer states. It can be used with natural, manufactured, mixed or liquefied petroleum gases.



Summer Air Conditioners

LINE OF ADD-ON summer air conditioning units in 2, 3 and 5 ton capacities designed for flexibility of installation in conjunction with forced air furnaces — Frigidaire Div., General Motors Corp., 300 Taylor St., Dayton 1. The units can be installed as a complete unit or in sections. Side panels can be removed and the coil and fan section lifted from the top of the compressor section and installed separately when the application requires this type of equipment.

Redesigned Plenum Humidifier

Model 550 Plenum humidifier features quieter, smoother operation due to new type resilient mountings; easier filter replacement; increased output; an improved method of water return; and a solid brass case — Daffin Mfg. Co., North Prince St., Lancaster, Pa. Water vapor from a centrifugal atomizing device is injected directly into the furnace air stream for positive discharge. The unit becomes fully automatic through a humidistat control. Rated output, ½ gal per hr.

Counterflow Oil Furnace

OBC75-HR COUNTERFLOW oil fired furnace designed especially for perimeter heating systems — Delco Appliance Div., General Motors Corp., 391 Lyell Ave., Rochester 1. The furnace incorporates a hinged trans-



former for quick access to the nozzle-electrode assembly of the oil burner. When the transformer is bent back, the electrical contacts are automatically opened. The furnace is specifically engineered for close clearance in closet installations (sides and rear, 1 in.; top of furnace, 1 in.; smoke flue, 9 in.; closet door to front panel, 19 in.) The two sides and the back are stamped from one piece of steel. Dimensions of the unit are $671/2 \times 25 \times 25$ in.

Consumable Wire Electrode

"MS-20" consumable wire electrode for use with the inert gas are welding process for mild sheet metal — Westinghouse Electric Corp., 401 Liberty Ave., Pittsburgh 30. The wire electrode is fed through a newly designed welding gun which, along with the d.c. are welder, becomes the welding system. Welds produced by this system can be painted without cleaning, as virtually no spraying or spattering of electrode material takes place, also there is no slag left to cover the weld, according to the manufacturer.

Ribbed Aluminum Building Sheet

ALUMINUM BUILDING sheet designed to provide attractive appearance at low cost — Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19. The sheet is intended primarily for use on frame structures, but



can be used as a facing sheet on concrete block buildings. The ribbed design is achieved by trapezoidal corrugations. The sheet is available with an embossed finish in lengths up to 18 ft and can be fastened by any of the conventional methods.

Control for Water Heaters

"Unitrol 200" water heater control designed for mounting outside the water heater shell yet thin enough for easy concealment — Robertshaw-Fulton Controls Co., Youngwood, Pa. It is shaped like a cigarette case, measures 1 7/16 in. thick, 4 17/32 in. high and 41/8 in. wide. It is suitable for all gases.

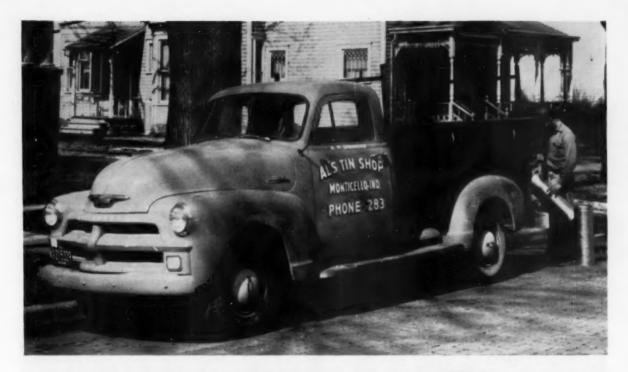
Multiple Notcher for Duct

"SPEEDNOTCH" QUICK SETTING multiple notcher for fabrication of ventilating ducts — Harper Metal Products, Ltd., 27 Layne Pl., San Bruno, Calif. The machine is designed to reduce the time required to



trace the pattern, mark and individually cut out each notch when readying sheet metal for duct construction. According to the manufacturer, it puts duct fabrication on a production line basis. Length of the unit is 10 ft, 3 in.; width, 2 ft; height, 3 ft, 9 in. Weight is approximately 600 lb.

(Please turn to page 132)



NEW CHEVROLET TRUCKS

have what it takes to boost efficiency and bring down costs!

In the next three paragraphs you'll find a few good reasons why you can get more work out of a Chevrolet truck and save money doing it.

INCREASED POWER IS THE FIRST BIG REASON

With Chevrolet's higher compression ratio you've got more power under the hood. Power that results in greater acceleration and hill-climbing ability. Faster starts and acceleration over the day's work save valuable time and increase over-all efficiency. Check the gas mileage, too. With this higher compression ratio, your Chevrolet truck registers more miles on the job for each tankful of gas. That's where you start to save money.

BUILT-IN RUGGEDNESS SAVES EVEN MORE

The strength and stamina of more rigid frames, and the special chassis features that pertain to each model—these combine to add extra ruggedness to your Chevrolet truck. Push it hard on the rough jobs; keep it going over long schedules—you'll still find your upkeep costs lower and your Chevrolet trucks lasting a lot longer.

ONE LAST POINT—and maybe the most important to you—you'll find Chevrolet's line of trucks priced the lowest of all! Talk over your needs with your Chevrolet dealer. He'll be glad to give you the facts about the best model for your job. . . Chevrolet Division of General Motors, Detroit 2, Michigan.

MOST TRUSTWORTHY TRUCKS



CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

THREE GREAT ENGINES-The new "Johnaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. NEW TRUCK HYDRA-MATIC TRANSMISSION*-offered on 1/2-, 3/4- and 1-ton models. Heavy-Duty SYNCHRO-MESH TRANSMISSION -for fast, smooth shifting. DIAPHRAGM SPRING CLUTCH - improved-action engagement, HYPOID REAR AXLE-for longer life on all models. TORQUE-ACTION BRAKES -on all wheels on light- and medium-duty models. TWIN-ACTION REAR WHEEL BRAKES -on heavy-duty models. DUAL-SHOE PARK-ING BRAKE-greater holding ability on heavy-duty models. NEW RIDE CONTROL SEAT* -eliminates backrubbing. NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BOUTES - give increased load space. COMFORTMASTER CAB-offers greater comfort, convenience and safety. PANORAMIC WINDSHIELD-for increased driver vision. WIDE-BASE WHEELS-for increased tire mileage. BALL-GEAR STEERING-easier, safer handling. ADVANCE-DESIGN STYLING-rugged. handsome appearance.

*Optional at extra cost. Ride Control Seat is available on all cabs of 1½-, and 2-ton models, standard cabs only in other models. *!Johnster 26!' engine available on 2-ton models, truck Hydra-Mailc transmission on ½-, ¾- and 1-ton models,



how fluid heat is built to build your profits

Fluid Heat quality is built into every Fluid Heat unit . . . gives you all the selling points you need to make prospects customers. The Wall Flame Rotary Burner, for instance, has set a new standard of heating efficiency and economy. And this efficiency and economy is well known. That's why it's easy to sell. This Rotary Burner is ingenious in design, rugged in construction, beautiful in appearance and economical in operation.



build your profits

National advertising in publications like Saturday Evening Post, Better Homes & Gardens, American Home, Living for Young Homemakers, House & Garden and House Beautiful, will pre-sell your prospects day in and day out throughout the year. This hard-hitting program, plus the Fluid Heat Sales Manuals and attractive, detailed literature, gives you maximum selling support . . . helps you build sales and profits.



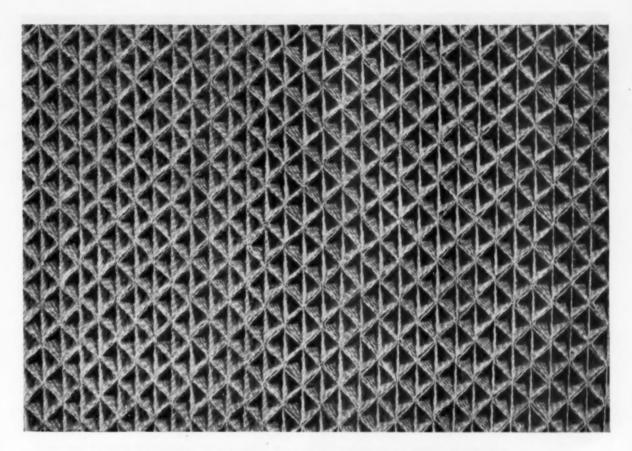
build your profits

Because the Fluid Heat line is so complete . . . featuring pressure burners, Wall Flame Rotary Burners, Warm Air Furnaces and Boiler Burner Units . . . every house is your prospect. Large or small, old or new, every installation can be a Fluid Heat installation. Why? Because you can supply customers with a unit ideally suited to fill every installation requirement. This completeness of line means homeowners and builders alike are your potential prospects . . . you have a natural sales-blazer and profit maker. For more details on a money-making Fluid Heat dealership, write: Fluid Heat Division, Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Md., or Coolbaugh St., Red Oak, Iowa.



"WORLD'S ECONOMY CHAMPION"

Division of ANCHOR POST PRODUCTS, Inc.
Sales Offices and Factories: Baltimore, Md. and Red Oak, Iowa



DO YOU RECOGNIZE THIS FAMOUS FACE?

THIS face identifies one of the world's most widely used high velocity, low resistance air filters—the AAF HV-2. Note how the woven wire media is formed into distinctive pyramid pockets. For each square inch of face area, there are 25 square inches of screen containing 60 lineal feet of wire to trap the dust, which adds up to 4½ miles of wire in a single 20" x 20" x 2" HV unit.

This use of more wire combined with the distinctive pyramid pocket design makes possible the following important advantages — (1) uniformly high cleaning efficiency over a wide range of air velocities; (2) large dust capacity and (3) no "unloading" of collected dust.

High filter capacity saves you both space and dollars, too. Two HV's will do the job of three standard unit filters in one-third less space. Fast installation with easily assembled holding frames makes for further economy.

AAF HV filters, in standard sizes, are stocked at strategic locations for prompt delivery. For complete product information, call your local American Air Filter repesentative or write us direct for Bulletin 203.



American Air Filter

American Air Filter of Canada, Ltd., Montreal, P. Q. • 355 Central Avenue, Louisville 8, Kentucky

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HEATING AND VENTILATING BLOWER UNITS





FOR SCHOOL... AUDITORIUMS • CAFETERIAS • GYMNASIUMS MANUAL TRAINING ROOMS Models for Factories • Offices • Stores

Floor, Wall or Ceiling Arrangements, these units can be furnished with tempering or heating coils or combination of both for use with hot water or steam and the accessories for controlling, filtering and directing air flow.

There is a Kennard H & V Unit that will fit your requirement of heating and filtering recirculated air, fresh air, a mixture of both or for ventilation only.



Unit No.	CFM at 800 FPM Coil Face Velocity	CFM at 500 FPM Cail Face Velocity	Maximum BTU Capacity 2 Row Coil
107	864	540	59,700
108	1,264	790	87,300
110	1,832	1,145	126,800
111	2,896	1,810	199,800
210	4,000	2,500	276,700
211	5,696	3,560	392,900
213	6,880	4,300	475,500
215	8,936	5,585	616,700
216	10,336	6,460	713,700
218	12,680	7,925	875,100
220	15,000	9,375	1,035,500
223	19,800	12,375	1,366,900
226	28,800	18,000	1,988,400

Write for Bulletin HV-1A



Wall or Ceiling Unit



KENNARD CORPORATION

1831 HANLEY RD. • ST. LOUIS 17, MO.

Announcing the new 💥

CENTURY GAS HORIZONTAL

bigger capacity in a smaller, more compact unit



with quicker, easier installation engineered-in, with service problems engineered-out.

CENTURY always gives you an outstanding product — with worthwhile engineering features that help you get more jobs. The new Century Gas Horizontal is no exception. It is smaller, more compact and very competitively priced. With all this it meets the high standards that have made Century the quality name in the heating industry for over 30 years.

Compact — Permits installation in homes with severe space limitations — in attics, utility rooms, basements and crawl-spaces.

Rugged Heat Exchanger - Heavy gauge. Extend-

ed surfaces at hottest portions provide additional heating surface to conduct heat directly from burner area . . . gives more uniform temperatures throughout heating sections . . . increases life of the unit.

Horizontal Vent — reduces clearance required . . . gets you jobs where other units won't fit.

Trouble-Free Burner — Cast iron, slotted ports. Gives complete combustion.

Factory Assembled — Saves installation time. Sturdy Casing — Finished in green hammer effect baked enamel.

Available in three sizes: All models A.G.A. approved 100,000 BTU input 80,000 BTU input 65,000 BTU input

CENTURY

ENGINEERING CORPORATION

Manufacturers of a complete line of automatic gas and oil heating equipment for over 30 years

MAIL THIS COUPON TODAY CENTURY ENGINEERING CORPORATION Ceder Repids, lows

Gentlemen: Send me specification sheet and complete information on your new gas horizontal models.

Name ____

City_____State____



Crescent Is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by

MOR-SUN OFFERS

YOU one of the finest lines

of home heating and air

conditioning equipment



Mor-Sun MLB Mighty Low Boy. 2 Models. Gas or Oil. Output Range 68,000 to 95,200 BTU/Hr.



 Mor-Sun Deluxe Model JMT. 4 Models. Gas or Oil. Output Range 84,000 to 152,000 BTU/Hr.

A complete line of quality hearing equipment for any home heating requirement — competitively period. This's what you need to get your full share of both the new home and replacement markets. And that's exactly what you get when you're a Mor-Sun Dealer. Check there forwards

- ... the right capacity, size and shape too every application — at the right price.
- ... dependable, trouble free models for both gas and oil.
- specifically designed for time and space-saving installation
- ... packed for easy, economical handling

Let us show you why Mor-Sun Dealers are doing more business with less effort — at a greater personal profit

MILL IN THIS COUPON AND MAIL IT TODAY FOR ALL THE FACTS-

You get so much more with MOR-SUN

 Mor-Sun national advertising and sales promotion to both home owners and builders "pre-sell" your prospective customers — make your job easier.



Mor-Sun Furnoce Division, MORRISON STEEL PRODUCTS, INC. 609 Amherst Street, Buffalo 7, New York

Please send me all the facts about Mor-Sun Forced Warm Air Furnaces and Air Conditioners.

Name Title

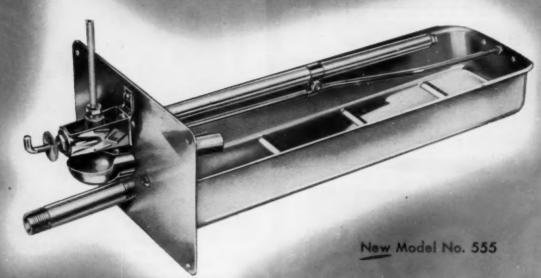
Street Zone

City......State

Also manufacturers of ROLY-DOOR STEEL GARAGE DOORS and MORRISON SERVICE BODIES

Pre-assembled.

FOR FASTEST INSTALLATION



Vaporite de la comatic de la comatica del comatica

Saves you money on every job. Cuts time and labor. No parts to assemble - no pan leveling or trick mounting.

Cut single plenum opening - slip completely assembled Vaporite through hole. Fasten 5 screws. Attach to water

pipe and it's ready to operate. Note: Also available, Model No. 555-C with 3/8" O.D. x 12" copper pipe overflow.

Most important of all - it's an automatic bumidifier with a DRIP FEED that gives you true CONTROLLED

HUMIDITY . . . Thermostat automatically measures the amount of water to go to hot pan.





EVERYBODY'S TALKING ABOUT
ECONOMY*

*International **Economy**

It's amazing how readily a customer will open his pocketbook once you give him the facts about an International Economy $^{\scriptsize{\textcircled{1}}}$ heating system!

and the selling is easy

You don't have to make speeches about Economy's long experience in home heating — this is our 112th year at it! Nor do you have to hit the customer over the head with the fact that this is Economy's greatest, most complete line. Whatever furnace model, feature, type or rating your customer may need — Economy makes it . . . and you sell it!

Then there's the matter of Economy's dependability, performance and unparalleled economy . . . and the fact that with Economy-built furnaces, your profit isn't eaten up in "call backs" and time-consuming servicing. Interested in talking about it?

See your distributor—or write: Dept. A-23 International Heater Co., Utica 2, New York.





Score more sales ... with NEW ECONOMY

NEW ECONOMY GAS FURNACES

- With and Without Vestibules
- 10-year Warranty
- A.G.A. Approved
- Meet Supplemental Utility Requirements
- Convertible to Oil

- 26 Models
- 60,000 to 210,000 Btu. Input
- Widest Choice of Models Hi-Boys, Lo-Boys, Counterflo, Gravity, Suspended, Gas Conversion Burners, etc.
- Assembled and Not Assembled Models

The Finest in Home Heating Since 1842 . . .





AT THE VERY HEART
OF FINE REPUTATIONS . .

AN EMERSON ELECTRIC MOTOR

The valuable extra you get with your Emerson-Electric motor

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THE EMERSON ELECTRIC MANUFACTURING CO. St. Louis 21, Mo.





Sectional masonry construction of the Van-Packer Packaged Masonry Safety Chimney with "Brick-Panel" Housing is shown in this cut-away view. Van-Packer is listed for all fuels — coal, oil, gas — for all home heating plants and incinerators by Underwriters' Laboratories, F.H.A. and major building codes.

How you can put up a genuine masonry chimney in 3 man hours or less



All parts needed to install the Van-Packer Chimney are delivered to the job completely packaged. Construction delays eliminated. Saves up to 50% on time and material.



Openings quickly prepared in the floor, for the chimney support, and in the ceiling and roof to permit passage of flue (floor suspended method).



Chimney support with heavy iron support straps is nailed to wood construction members of the floor. Van-Packer installs without special skills.



Flue sections made of %" fire clay tile inner lining, 3" vermiculite-concrete insulating wall, and cementasbestos outer jacket. Here first 2' section is installed in support.



Acid-proof, leak-proof cement joins masonry sections up to desired height. Cement comes in easy-to-use plastic squeeze bags. Each joint is secured with aluminum drawband.



Aluminum floahing is installed on the roof. Van-Packer's "Brick-Panel" Housing over its aluminum flashing gives chimney a weathertight seal.



Brick-red cement-cashestos panela are cut to roof pitch, then assembled with corner angle irons and sheet metal screws provided.



Corner angle Irons quickly fasten housing to roof. Deep embossed mortar lines retain natural color if housing is painted to match other brick colors.



Aluminum housing cap, chimney pot and refractory rain cap are added to complete installation. Van-Packer develops 34% more draft than standard code brick chimneys.



Massive "Brick-Panel" Housing adds beauty of convertional brick to all homes while saving on construction time and material.



PACKAGED MASONRY CHIMNEY WITH "BRICK-PANEL" HOUSING

VAN-PACKER CORPORATION . BETTENDORF, IOWA

Send for all the facts on the Van-Packer Packaged Masonry Safety Chimney, Ask for Bulletin 11K-AF-







Same blower as above with weatherproof drive cover in



Wheels 18" in diameter and larger are all welded. Sizes 27" have three tie-rods for additional rigidity . . . dynamically balanced



On blowers 15" diameter and smaller . . riveted construction. Dynamically balanced . . . vibration free operation at high speeds. Don't let the Middle Sige Job get away

Don't let any jobs get away from you because you need quick engineering data, competitive prices, or on-time delivery information. Just call Peerless—reverse the charges . . . talk to engineers!

Peerless belt-drive utility blowe.s range in size from 9" to 30", having speeds to suit your pres-

sure and volume requirements.

Peerless belt-drive utility blowers are complete ready-to-install packages, and readily convertible for installation at eight angles of discharge. They are available in clockwise or counterclockwise rotation. Motor pulley is adjustable to change speed, and pulley sizes may be changed. Operation is quiet . . . housings convertible . . . covers of one-piece welded construction . . . wheels balanced . . . finish of baked-on enamel.

If you have a job that needs attention right now, give us a call and ask for the Fan and Blower Division. Reverse the charges, of course. Hundreds are doing it. You'll be delighted with the service.

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THE PEERLESS ELECTRIC COMPANY

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THE CUSTOMER'S HAPPINESS COMES FIRST

Armstrong "Indoor Sunshine" furnaces and summer air conditioners do their jobs well — make householders happy. Happy customers are satisfied customers, and satisfied customers mean more sales,



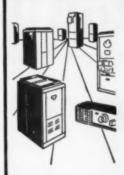
INSTALLATION IS EASIER...FASTER

Designed to install easily, whether to replace an old furnace or for a new house. Keeps dealer costs down. Many Armstrong units are completely assembled at the factory.



SMALL INVENTORY MEANS PROFIT

Armstrong distribution through wholesalers means little or no inventory for the dealer. Little or no money tied up.



MORE THAN 50 UNITS...ONE FOR EVERY NEED

Selling Armstrong furnaces and summer air conditioners means selling a complete line. There's an Armstrong for every home, every situation. Every one is extremely attractive. Finished in two-tone blue enamel, baked on.



MAKING FINE PRODUCTS IS A TRADITION

Manufactured in modern plants, manned by capable workmen, Armstrong furnaces and air conditioners are examples of fine workmanship and high quality. Priced competitively, too.



NATIONAL ADVERTISING AND DEALER AIDS BACK UP THE PRODUCT

Continuing national advertising helps make sales. This year, Armstrong ads will be seen in Better Homes & Gardens, The American Home, Small Homes Guide, Home Modernizing and Practical Builder. Retail merchandising helps, too—a complete selection.

If you'd like to be "with Armstrong," see your nearby Armstrong wholesaler now, or drop us a line. We'll welcome your questions and give you straight answers.



Armstrong's two huge plants serve both sides of the continent quickly, economically. A warehousing distributor, with a complete Armstrong inventery, is within a stone's throw of everywhere. Wherever you are, Armstrong's distribution system is set up to serve you, it's better, quicker, more profitable . . . for you.

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They're NEW... They're DISTINCTIVE MONCRIEF

Gas Fired Unit Heaters



and!
They are Priced
to Meet
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- All steel
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- Ribbon type
 Burners
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- Rubber Mountings.
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• Moncrief now offers a gas fired Unit Heater with the MODERN look. It is distinctive in styling. It is outstanding in design and construction features. A high quality product, yet priced to meet competition.

This completely automatic, gas fired Unit Heater will provide heat when and where it is needed and — it's quiet in operation.

At no extra cost, this new unit provides the high efficiency required for factories, warehouses, and service stations — plus, new styling designed to compliment all types and styles of rooms in stores, showrooms, restaurants and offices where appearance is important.

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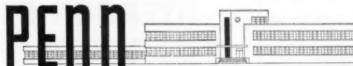
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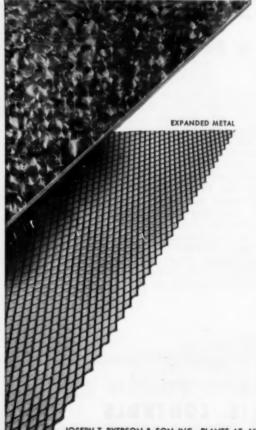
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Ryerson galvanized sheets are a special tight-coated type that form readily without peeling or flaking—are bright and clean with uniform spangle. Workable Ryerson stainless is all time-tested Allegheny Metal, with the high quality finish that will please your most particular customers. Ry-Ex Expanded Metal is available in two types, standard and flattened, both types with all sharp edges removed.

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Profit—Business' Sparkplug

THE YEAR 1954 will soon be drawing to a close. Reports we have received indicate that it has been a good year for the sheet metal contractor and the warm air heating and residential air conditioning dealer. But already there are some who are saying that 1955 will not be as good as 1954, businesswise — that prospects will be harder to find and that profits will be down.

It's all right to listen to this type of forecasting as long as we allow these comments to act as a reminder that a successful business man must ever be alert to the changing times. However, we do not believe that 1955 will be any less favorable for our industry than 1954.

One of the big reasons for our belief is the continuing demand for private homes — the number to be constructed in 1955 should equal the 1954 market. The modernization market — big this year — should be even bigger next year. The growing demand for residential air conditioning will result in a substantially larger number of installations in 1955 than in 1954, which has broken all previous records.

The sheet metal industry should feel the effects of industrial plant work. We look for industry to continue to extend its modernization and expansion plans. All of this should mean activity at least at the same level in 1955 as in 1954.

Why is all this business activity possible? The answer is profit. Without profit, a business will fail. America's prosperity is based upon the incentive to earn a profit and profits make it possible to invest in ways to earn more profits.

The value of making a profit in the sheet metal, warm air heating and residential air conditioning industry goes beyond immediate results, because a reputation for being able to operate a business successfully makes it possible for a dealer or contractor to obtain additional capital for expansion or modernization of his business.

In closing, permit us to leave this thought: When figuring a profit, look upon it as a business tool — one that can be used to advantage beyond the immediate future.



CARBIDE BURRS provide a fast, convenient means for cutting excess weld metal in inside



WELD BEADS on flat surfaces can be cut with a narrow fiber bonded wheel

How to Surface-Finish Stainless Steel

By E. M. Rains Armco Steel Corp.

THE ATTENTION which must be given to the finished surface is one of the things that makes the fabrication of cabinets, sinks and other kitchen accessories from sheets of stainless steel different from the fabricating process used with other materials. Of course there are other uses for stainless steel where appearance is not as essential as in kitchen and hospital applications. On the finer custom made jobs, the customer pays close attention to the surface because he wants an attractive appearance as well as the advantage of corrosion resistance as provided by this material.

Surface finishing of stainless steel in the shop is expensive and time-consuming. Polishing a stainless steel cabinet is not something that can be finished in half an hour. Where polishing is required, the cost involved and the subsequent increase in price should be brought to the customer's attention at the time the bid is submitted.

Seven Standard Finishes Available

There is much custom stainless steel work that can be done with a minimum of surface finishing. There are seven standard finishes available from stainless sheet producers. The most commonly used polished surfaces are No. 4 polish (approximately 150 grit), No. 3 polish (approximately 100 grit) and No. 6 polish (Tampico brush polish). It is possible to design the product to be fabricated to use one of the standard finishes and if care is used to protect the finish during fabrication (see American Artisan for July, page 54), it will be possible to reduce the surface finishing required.

Another way to reduce surface finishing is to use sheet metal screws and lap joints instead of welded joints. Or again, the product can be so designed that welds will be hidden from sight and there will be no need to blend the sheet surface and the joint.

Basically, there are three sets of conditions where surface finishing is necessary:

- 1) On a welded structure where the weld must be ground off and blended with the parent metal.
- When a customer requires a special finish other than that supplied by the mill.
- Refinishing of a product where the surface has been damaged during fabrication.

Whatever the cause for refinishing a stainless steel surface, the essential thing to keep in mind is the care required to produce the appearance desired. It is recommended that the following information be used as it applies to each individual problem.

Grinding Off Weld Joints

On a welded structure, the first surface finishing problem is to grind off the welds. Here is where the quality and type of weld is highly important. Any excess weld metal will have to be ground off — a time-consuming operation. Therefore it is important that weld beads be small and even as possible. For best finishing results, welds should be sound and well made, with no pits, or heavy build-up of metal. Welders should try to observe good practice, which is a 100 percent penetration with a minimum heat input and the least possible distortion. If these precautions aren't exercised, surface finishing becomes an overly complicated process.

Probably the fastest way to grind off weld beads on flat seams or outside corners is with a disc sander or portable grinder. Bear in mind, however, that a disc sander leaves a circular scratch pattern that must be polished out later. Fiber-bonded discs seem to be most successful for this type of work.

Best results are obtained with portable grinder wheels four to six in. in diameter. With either size disc, a wheel speed of four to six thousand fpm is desired. Grinder wheels of the rubber-bonded, resinoid-bonded, rubber-backed, or pneumatic type are usually used for this purpose. Use of narrow wheels for close control over the area being ground is recommended.

The first operation is to cut off the excess weld metal. Start with a coarse grit — 36 to 40. Hold the wheel crosswise to the weld to just knock off the top of the bead. Avoid gouging the metal on either side of the weld.

As grinding progresses, turn the wheel and grind in a direction parallel to the bead to complete the rough grinding. Smooth the bead down but don't remove it entirely. From this point on, hold the wheel parallel to the grit line on the original sheet. As the polishing progresses, change to a 60 grit wheel, then 100, 120, and 150 grit until the desired finish has been obtained.

This progression of grits removes metal faster than a single wheel and provides a better finish. Using this progression of grits, you will have better success in matching the mill polish on the original sheet. Remember, as

The appearance of the finished product is frequently the measure used to judge its workmanship. Here are ways to turn out stainless steel products that will please the most exacting demands of any customer

A STITCHED FELT wheel, treated with glue and abrasive plus a 150 grit grease stick, will do an excellent finishing job



SURFACE POLISHING with high speed tools calls for progressive use of polishing grits, 40 grit numbers being the maximum between successive operations



the bead becomes flush with the sheet the wheel must be held parallel to the original polish lines on the sheet.

What About Corner Welds?

Weld beads on inside corners raise a problem because they are difficult to reach. One way to overcome this difficulty is to design the job with rounded corners about 1 in. radius — to allow more working room.

For fast removal of excess metal in corners, carbide burrs are most effective. They are brittle and must be run at very high speeds and handled carefully. Use them in a small portable high speed grinder, 20,000 to 25,000 rpm, to achieve the speeds recommended by manufacturers. Avoid overheating the burrs; don't force them.

For polishing and blending welds on inside corners, small fiber-bonded wheels are useful. Several abrasive manufacturers make cartridges, crosses and pads of abrasive cloth that can be mounted on a mandrel or shaft and used on a portable grinder. These are economical and very effective for polishing both inside and outside corners. With small wheels, use high speed tools to obtain the needed surface speed. Follow the regular progression of grits described above.

In all initial operations, be careful to keep the tool from straying off the area to be polished, otherwise damage to the adjacent surfaces will result.

Polishing the Entire Job

The amount of finishing required will depend on the type of equipment being built, also on the mill finish of the stainless steel used.

If the mill finish was no. 4 polish, no. 3 polish or no. 6 polish, it may be possible to blend in the welded area satisfactorily without refinishing the whole job. The general procedure would follow the method described for polishing corner welds. On the other hand, some sheet metal shops prefer to start with a cold rolled finish such as no. 2D or no. 2B and apply their own finish in the shop. Other shops like to refinish each product completely so the welded area cannot be detected.

The entire surface can be refinished in any sheet metal shop with the proper equipment and procedure. Portable hand tools, electric or air driven, meet most fabricating needs. Portable grinding wheels are recommended because they leave straight, parallel grit lines. The use of a disc sander is limited because it tends to leave marks caused by its circular action.

For final surface finishing operations, some shops prefer to use their own built-up grinding wheels. These are simply felt wheels, used on a portable grinder, that have glue and abrasive applied in the shop. They can be recoated and used again and again. Briefly, the coating operation consists of applying special glue to the face of the felt wheel, rolling the wheel in a trough of abrasive grits of the proper size, and permitting to dry thoroughly.

Other shops are having good success with pneumatic wheels on portable grinders. These wheels use a special belt of abrasive cloth. The belt is merely slipped into place and the wheel pumped up like a rubber tire.

Other types of surface finishing equipment include rubber-backed wheels, belt sanders, and hand sanders.

Polishing Progression Important

It is important to follow a definite progression of grits when polishing, increasing each step no more than 40 grit numbers. Complete the polishing operation with the grit that will produce the desired finish. Cold rolled finishes seldom require coarse grinding. On a no. 2B finish, for example, you might want to start with a 100 or 120 grit and finish with a 150 grit wheel.

For 60 grit and finer cutting, wheel speed should be about 6000 fpm. Lubricants such as kerosene, machine oil, lard oil, and palm oil are generally used as a means of controlling the finish.

Move the wheel with care and keep abrasive scratches straight and parallel. Avoid overpolishing in spots and lift the wheel before reversing its stroke.

The oldest and simplest finishing method is by hand, using an emery cloth. This method can be used for finishing the entire surface, blending in corners, or as a final touch-up operation.

On large areas where flat work predominates, the continuous belt sander does an efficient job and permits faster polishing. Steady pressure and care are required to obtain an even polish. The use of a lubricant is recommended.

A satin-like special finish can be achieved with a Tampico brush. A no. 2B finish or no. 4 polished sheet can be Tampico-brushed without prior grinding or polishing. For large pieces, a swing grinder or portable motor with a Tampico brush and an abrasive grease stick are all that are necessary. A pedestal-mounted wheel is suitable for small pieces.

In Tampico brushing, a grease stick with about 150 grit is applied directly to the brush while it is rotating. Hold the work to the brush, using steady pressure to eliminate chatter. Take long strokes in one direction to prevent having to blend marks caused by stopping the operation before the end is reached.

Tools Needed

Most stainless steel finishing work done in the average sheet metal shop can be done with three portable electric or air-driven tools. One of those tools should be a small, high speed grinder for use with carbide burrs and small grinding wheels. A second tool would be a larger, slower portable grinder for use in refinishing the stainless steel surface. A third tool, a disc sander, is considered a practical investment. For convenience, a portable belt sander or reciprocating sander is a handy tool. For an investment of about \$500, a shop can be equipped to handle most of the ordinary finishing jobs required in the fabrication of stainless steel products. This includes the three basic tools and their accessories.



Cashing in on the New Tax Law

James B. Kobak, CPA,
Partner, J. K. Lasser & Company



For the first time in 75 years there is a new tax law. This law, known as the *Internal Revenue Code* revises existing statutes to a point where dealers and contractors can fit the *Code* to their individual needs

FOR THE FIRST TIME in close to 75 years, the United States has a brand-new tax law to live with—a truly sweeping revision of the Internal Revenue Code.

The importance of this new law to the individual taxpayer is great. But to the businessman it means even more. Congress has given him a new economic freedom. In return the businessman is expected to use that freedom to insure growth and prosperity for his business.

Described here are some of the highlights of the new law. However, there are many other changes in the new 1000-page code. There are hundreds of new benefits. Congress went through the old law with a fine-tooth comb in its drive to soften or get rid of those provisions that might stymie business growth. Some of the benefits lead to these two important goals:

- How to get the best tax break out of the law for your business.
 - · How to use its provisions to bolster employee morale.

Faster Depreciation Allowed

The depreciation rules are typical of the spirit of the new law. Their aim is to encourage new investments by giving taxpayers a break—in this case by allowing faster and larger write-offs in peak tax-rate years.

You can now choose any of several methods for depreciating your property. You can take: 1) the old *straight*line method, stretching equal deductions over the useful life of plant or equipment; 2) a declining balance method or a sum of the digits method, both of which enable you to recover about one-half the cost of an asset in about one-third of its useful life; 3) any other reasonable method of depreciation that fits your business (for instance, a rate of depreciation tied to your rate of production).

How These Methods Work

Suppose in 1954 you buy a new factory building for \$25,000. The estimated useful life of the building is 50 years. Under straight-line depreciation, you get a deduction of 2 percent each year, or \$500. Under the declining balance method, you take 4 percent—not 4 percent of the cost, but 4 percent of the remaining balance each year. In other words, over the first three years, you would deduct:

1st Year: 4 percent of \$25,000, or \$1,000 2nd Year: 4 percent of \$24,000, or \$960 3rd Year: 4 percent of \$23,040, or \$921,60

In comparing the straight-line method with the declining-balance method, keep this in mind: under declining balance, you get back about 40 percent of your cost during the first quarter of your asset's life, about two-thirds of cost through the first half. So if heavy deductions in the early years of the property's life are important to you, you can use this system. Otherwise, if you have no income to offset right now and want to

". . . the extra cost of the new equipment may be offset by the higher depreciation deductions"

keep your deductions constant, the straight-line method is still available.

The sum-of-the-digits method has much the same effect as the declining-balance system. There's this difference though: sum-of-the-digits permits you to set your own salvage value; under declining-balance, the value is automatically fixed.

Say you buy a machine in 1954 for \$175. It has an estimated useful life of five years and an estimated salvage value of \$25. Under sum-of-the-digits, your deductions on the machine for the first year would equal 5/15 of \$150 (cost less salvage value), 4/15 the second year, 3/15 the third year, and so on. The rate for any year consists of a fraction. The numerator of this is the number of the year taken in reverse order, in this case 5. The denominator is the sum of the numbers representing the remaining years of life, 1 plus 2 plus 3 plus 4 plus 5 in this case, 15.

Besides giving you an added incentive for new construction, these depreciation rules — which apply to new buildings and new equipment bought after 1953 — may tip the scales in favor of buying new, instead of used, equipment. The extra cost of the new might be offset by the higher depreciation deductions. And on top of that, of course, you have the efficiency of new equipment.

Partners and Proprietors Given Tax Choice

The most important change in the new law affecting partners and single proprietors is this: they can cut their business-profits tax by electing to have their firms taxed as corporations. And they don't have to incorporate to do it.

This can mean a lot to the small businessman. It offers him a shield gainst high personal income tax rates. By choosing to be taxed on a corporate basis, he can limit himself to a salary that puts him in a lower income tax bracket. And though the business pays a corporate tax on the profits that remain, the total of the two taxes may be less than what the owner would have to pay if all the income was reported on an individual return.

Example: You, as a single proprietor, have a business income of \$100,000. You now pay a tax of \$53,640 on that if you file a joint return. If you elect to be taxed as a corporation — and you take a salary of, say, \$35,000 — you pay an individual tax of \$11,900. On the remaining \$65,000 from the business, you pay a corporation tax of \$28,300. That makes a total tax of \$40,200, compared with \$53,640 if you had reported all the income on a joint return. However, your real overall tax saving isn't quite this big; the earnings left in the business are subject to a future capital gains tax of about \$9000. But even figuring that, you still come out with a savings of about \$4000 by choosing the corporate basis.

Not all partnerships or proprietorships, of course, can take advantage of the switch to corporate reporting. There are certain strings attached. For instance, capital — in the form of inventory or equipment — must be a material income-producing factor in your operation. And even for those who can make the change there are

Depreciation of equipment and how it's done

Suppose a sheet metal contractor has purchased a new power driven nibbler at a cost of \$6000 that is to be depreciated in 5 years. There are 3 ways he can depreciate this purchase, each with an advantage. The contractor may select the method best suited to his business operation.

	Stre	aight line	method		
Year	1	2	3	4	5
Amount deducted annually	\$1200	\$1200	\$1200	\$1200	\$1200
Total amount of depreciation	1200	2400	3600	4800	6000
	Doub	e declinin	g method		
Amount deducted annually	\$2400	\$1440	\$ 864	\$ 518	\$ 311
Total amount of depreciation	2400	3840	4704	5222	5533
	Sum-c	f-the-digi	ts method		Made -
Amount deducted	\$2000	\$1600	\$1200	\$ 800	* 400
annually	\$2000	\$1600	\$1200	\$ 800	\$ 400
Total amount of depreciation	2000	3600	4800	5600	6000

". . . the new tax law makes it a great deal easier to choose or switch around your accounting methods"

some definite drawbacks. The election once made is irrevocable — unless there's a change of ownership of more than 20 percent. It rules out any participation in a qualified pension or profit-sharing plan of the business.

All in all, though, the new provisions amount to this: if they fit your case — and needs — they can mean sizeable tax savings.

Surplus Rules Are Eased

A major accomplishment of the new law is to get rid of a trap that faced almost all closely held corporations — the penalty on unreasonble accumulation of surplus.

The new ground rules allow you to move safely within a wide area — put aside profits for future expansion or emergencies, even plan dividend declarations so they work to your tax advantage. The old law left the burden of proof on what was a reasonable accumulation of surplus strictly up to the company. There was no specific exemption, and penalties were stiff for those who ran afoul of the Treasury Department.

Now that's all changed. Under the new code, you can accumulate up to \$60,000, without penalty, to meet reasonably anticipated business needs. Where you pile up more than the \$60,000, the burden for proving it to be unreasonable is now on the Treasury Department. And even if you do transgress, the penalties are lighter. They used to be applied to the entire amount of the retained earnings. Now you pay only on the portion that's proven to be an unreasonable accumulation.

Changes You Can Make

The new tax law makes it a great deal easier to choose or switch around your accounting methods. Here are just a few of the things it allows:

- You can use a 52-week or 53-week fiscal year instead of a calendar year or fiscal year ending on the last day of a month. A business can thus change its accounting period to end on a certain day each month rather than on the variable end of the month. Advantage: fewer adjustments to make on your tax return (you can end your year at the end of a working week to take inventory over the weekend).
- If you have an installment dealer who reports on the accrual basis, you can shift to the installment basis without paying a double tax on the income already reported under the accrual system. If you change to the installment basis, you get a credit each year for the tax on the income that you have already reported on an accrual basis. Note, however, that the new rules apply only to 1954 and the years that follow.

- You can now set up reserves for future estimated costs — cash discounts, vacation pay, self-insurance for injury and damage claims, returns and allowances, and the like. But check carefully here to see just what the law says you can and can't do. Estimated reserves will have to be reviewed each year. If they are too big, the excess must be added back to income.
- If you are on an accrual basis, you can now spread prepaid income over the period in which it will be earned up to a limit of five years after the year you receive it. Under the old law, you had to report the money in the year you got it. This change suggests an inexpensive way to finance your business: offer discounts for advance payments; if the discounts are less than the interest you would otherwise pay for the use of the money, you're ahead.
- Hybrid accounting methods, the new law says, are now perfectly OK. For instance, you can use the accrual method to report sales and purchases, a cash basis for deductions for rent, wages, interest, and insurance. In effect, this gives a green light to small business to use whatever accounting methods suit their operations best. And there's no worry about having to adjust for tax purposes.

Loss Rules Eased

For businessmen who have had good profit years and who are now running into losses, the new rules for carryback of net operating losses are a welcome change. You can now carry back a loss against the profits of two preceding years — not just one, as the old law allowed. And the new law is more liberal in the reductions you have to make in your carryover loss. On top of this, you still have the five year carry forward plan against future profits.

Example: You make a \$10,000 profit in 1952 and a \$5000 profit in 1953. In 1954, you have a \$15,000 loss. Under the old law, you could carry back your loss only to the \$5000 in profits earned in 1953. That would mean a refund on 1953 taxes, but the other \$10,000 of the loss could be applied only against future profits. Now, under the new law, you can go back two years, which in this case uses up the entire loss. A refund is in store on both 1952 and 1953 taxes.

The old law was muddled about research costs. In most cases, small companies had to capitalize and write off expenses over the useful life of the benefit. Or, much later, they could deduct them as an abandonment loss.

That's all different now. You can deduct research and experimental expenses in the year the cost is incurred. Or you can elect to amortize the expense over a period of five years or more. However, once you decide how you want to handle the costs, you can't change unless you get Treasury Department approval.

Additional Deductions Allowed

There are many changes in what a company can deduct from income. Here are several of the more important ones:

 Organization expenses to set up a corporation — legal fees, stock taxes, etc. — can now be written off over a period of five years or more. Under the old law, you couldn't take them until the corporation folded up.

• The new law makes a bad debt out of any bad debt contracted while you or your company is in business. This holds even if the debt goes sour after the company goes out of business. The old rule was that a debt that turned bad after a taxpayer had gone out of business wasn't a bad debt. That meant the taxpayer was deprived of a fully deductible loss against ordinary income. The reason: a non-business bad debt is deducted only against capital gains and ordinary income up to \$1000.

• Corporate charitable contributions that top the 5 percent limitation can now be carried over to two succeeding years, provided they're within the 5 percent limit for those years. Under the old law, any excess within a year was lost to the corporation.

Other Helpful Changes

There are scores of other ways in which the businessman will find the new tax law an easier one to live with. For instance:

• Stockholders of closely held corporations are now eligible to cash in on the tax benefits of restricted stock options. The old law barred anyone who owned more than 10 percent of a company's stock from getting them. Now a person holding more than 10 percent of a company's stock can take a restricted option provided

the option price at the time the option is granted is at least 110 percent of the value of the stock. The option must be exercised within five years of the time it is granted, or within one year after the enactment of the law.

 Distributors and dealers can now apply capital gains rules to the payments they get when their franchise or distributorship is cancelled. However, they must have made substantial investments in the facilities of the distributorship.

• The threat of a double tax in the sell out of a corporate business is now all but removed. Under the old law, a double tax was always a danger; first when the corporation sold the company's assets; second when the stockholders received the proceeds in liquidation. Now a corporation that plans to sell out can adopt a plan of complete liquidation. If it sells all its assets — except for certain inventory items and installment obligations — within 12 months after the adoption of the plan, there is no tax. The only bite is on the stockholder when he gets the proceeds of the liquidation. And he pays then only if the proceeds are more than the tax basis of his stock — and only at capital gains rates.

• The new law gives you specific tax protection in cases where a creditor cancels some of your debts. It used to be that the courts would often have to decide whether the cancellation constituted income to you. Now there's a simple way out; you merely reduce the tax basis of your property by the amount of the discharge. All you have to show is that you incurred the debt in connection with property used in your trade or business. You don't have to be incorporated, nor does the debt have to be a secured one.

These are only a few of the immensely important benefits that the new tax law offers to business. It's your responsibility to take full advantage of all of them — each and every one that applies to your operation. Next month, in a second section of this report, you will find how some of the new provisions can work toward building a happier, more efficient work force for your company.

ASHVE Outlines Air Conditioning Research Plans

SPEAKING at the recent conference on refrigeration and air conditioning held at Columbia University, L. N. Hunter, president, American Society of Heating and Ventilating Engineers, pointed out that since 1919 the society has devoted 95 percent or more of its research to the field of air conditioning. Discussing the development and progress of ASHVE research in this field, Mr. Hunter explained that ASHVE is an educational and scientific organization operating primarily for the benefit of the

general public by advancing the arts and sciences of heating, cooling, ventilating and the allied fields.

Also appearing on the program were Clark M. Humphreys, senior engineer of ASHVE's laboratory; Richard S. Dill, chairman of the society's committee on research; and Elmer R. Kaiser, ASHVE director of research. Mr. Humphreys, discussing Past ASHVE Research, traced the development of the work accomplished since 1919. Mr. Dill, in his paper entitled Present ASHVE Research, out-

lined some of the current projects at the laboratory. Mr. Kaiser's talk — Future ASHVE Research — dealt with some of the many research projects ahead, including a new general investigation of sensory and physiological responses of human beings to environmental conditions of temperature, humidity, radiation and air motion. Also included in the research program are weather data, heat and air distribution, heating and cooling loads, and the thermal proportions of construction materials.

RESIDENTIAL AIR CONDITIONING

Where to Look for Air Conditioning Troubles

By S. W. Reid

Air Conditioning Engineer
Gilbert Associates, Inc.

When equipment fails to perform as designed, a systematic analysis of the symptoms — as outlined here — will quickly uncover the fault

STRAIGHT THINKING has no substitute in analyzing symptoms and correcting difficulties which cause complaints about air conditioning systems. Such thinking is possible only with a thorough knowledge of the characteristic behavior of a system as it reacts to different variables. A person cannot hope to understand or to judge a system from data gathered under a given set of operating conditions unless he has some background standard for judgment; that is, unless he knows how the variables should affect the data.

Each time an electric light bulb is turned on we know — for all practical purposes — that it will produce a certain amount of light and heat and draw a certain rate of current flow. These items can be measured and the readings taken will remain substantially constant. They are not influenced by external factors.

A refrigerating system may be hermetically sealed like a light bulb (to cite a popular comparison), but it certainly cannot be compared to one so far as performance characteristics are concerned. Whereas the useful output of the light bulb is constant, the useful output of the refrigerating system reflects the influence of a number of factors. Unless each is properly evaluated with regard to its possible effect in causing abnormal operation, the service man may find himself jumping to erroneous conclusions based upon an incorrect analysis.

A Chart for Trouble Shooting

Our purpose this month is to set up a service analysis chart as an aid to finding the source or cause of difficulties in an air conditioning system. As noted above, at the beginning of this article, there is no substitute for straight thinking, and the chart is not offered as such. The main purpose of the chart is to outline a systematic procedure as opposed to a hit or miss method. In the past there have been a number of charts of this type made, and all have served well to the extent of their usefulness. Most experienced and efficient service men actually do follow a procedure and could make up their own charts. Let us see how it might be done.

To make any kind of an analysis of a problem we must have as many facts relating to it as we can accumulate. The first fact we will have will be the complaint of the owner. This must be listened to carefully even though it may not be considered accurate. Quite often the service man will be able to pick important clues from the owner's story. What are the usual complaints about a residential air conditioning system? The larger number of them should fall into the following four classifications:

- 1) Unit won't run.
- 2) Unit won't cool.
- 3) Unit operating costs have increased.
- 4) Unit is too noisy.

After the owner has told his story, the service man is on his own. Depending upon the particular problem, he may have to avail himself of additional facts in order to eliminate the complaint.

Nameplate Data Valuable

The motor nameplate data, for instance, serves as a guide in making an analysis of motor operation. If the measured voltage at the compressor terminals is outside of the plus or minus 10 percent variation from nameplate

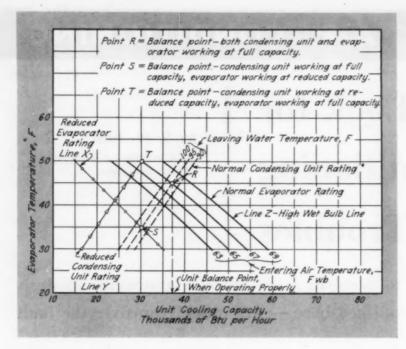


Fig. 1—RATING OF an evaporator as compared with condensing unit performance under several entering wet bulb temperatures

value usually allowed in motor application, the motor cannot be expected to perform as it should. If the measured amperage is far above or below the nameplate value when the unit is operating under load, we have a direct indication that further checking is needed. Compressor motor nameplate data usually includes the voltage, phase, cycles, full load amperes and horsepower.

Information on the unit data plate usually includes the type and quantity of refrigerant. This, of course, must be known in order to recharge the system. The plate may also contain the unit model and serial numbers which are important for reference to service manuals or in checking with the manufacturer for warranty purposes.

The following can be useful in diagnosing air conditioning troubles, but only after the equipment has been operating for a period of several hours or at least until successive measurements become fairly well stabilized.

- 1) Pressures at compressor suction and discharge
- 2) Dry and wet bulb temperatures of the air entering and leaving the conditioned space.
- Dry and wet bulb temperatures of the air entering and leaving the cooling coil.
- 4) Temperature of the suction line at the coil.
- 5) Temperature of the liquid line at the condenser.
- 6) Temperature of the water (or air) entering and leaving the condenser (also quantity).
- 7) Voltage at disconnect switch and at compressor terminals on start up.
- 8) Amperage in the compressor leads.

Pressure-Temperature Relationship

The operating pressures and their corresponding temperatures are perhaps the most important data that are taken. These provide a very sensitive indication of unit

FIRST WE EXPLAINED FUNDAMENTALS

. . . in Mr. Reid's series of 20 articles (concluded in the May, 1954 issue). The basic operating characteristics of residential cooling equipment were described in detail.

NOW SPECIAL ATTENTION TO SPECIFIC PROBLEMS

... in a new series based on the author's wide experience in the field. Sample articles:

- How dealers can train personnel service men, installers, dispatchers, clerical help in enlarging their air conditioning departments
- Converting an existing gravity warm air system to a residential air conditioning system
- How to handle air conditioning equipment in the shop and, when installing at the customer's site, how to minimize equipment failures
- > Zoning residential air conditioning (special problems, instructing home owner, etc.)

TABLE 1

Electrical Equipment Trouble Analysis

Why unit won't run

- 1. Main power circuit open
 - a) No power supply
 - b) Disconnect switch open
 - c) Fuse blown
 - d) Magnetic starter open
 - e) Terminals loose
 - f) Motor defective
- 2. Starter holding coil circuit open
 - a) Overload relays tripped
 - b) High or low pressure cutout tripped
 - c) Low voltage control relay open
 - d) Starter coil defective
 - e) Terminals loose
- 3. Low voltage control circuit open
 - a) On-off switch open
 - b) Thermostat open
 - c) Low voltage relay coil defective
 - d) Low voltage transformer defective
 - e) Terminals loose
- 4. Motor starting circuit open
 - a) Capacitor defective
 - b) Starting relay defective
 - c) Terminals loose
 - d) Motor defective
- 5. Low voltage
 - a) No-load voltage low
 - b) Motor terminal voltage low during starting
- 6. Seized compressor

What to do

- 1. Close main power circuit
 - a) Call power company
 - b) Close switch
 - c) Replace fuse
 - d) Check holding coil circuit
 - e) Tighten terminals
 - f) Check winding resistance, replace
- 2. Close holding coil circuit
 - a) Reset relays
 - b) Reset cutout
 - c) Check low voltage control circuit
 - d) Replace coil
 - e) Tighten terminals
- 3. Close low voltage control circuit
 - a) Close switch
 - b) Set thermostat lower or replace
 - c) Replace coil
 - d) Replace transformer
 - e) Tighten terminals
- 4. Close motor starting circuit
 - a) Replace capacitor
 - b) Replace relay
 - c) Tighten terminals
 - d) Check winding resistance, replace
- 5. Raise voltage
 - a) Call power company
 - b) Increase size of lines to disconnect switch
- 6. Repair or replace

performance as will be shown. Most comfort air conditioning equipment is designed to balance at 40 to 45 F evaporating temperature and 100 to 105 F condensing temperature when the air entering the coil is 80 F db, 67 F wb and the condensing water leaves at 95 to 100 F. If these temperatures as indicated by the operating pressures get much outside the normal limits, the system must be checked thoroughly to find the cause.

The temperatures of air' entering and leaving the conditioned space and the cooling coil provide information on any heat losses or gains that may occur in the supply and return duct systems. The latter data may also be used to check unit capacity by making use of psychrometric tables to obtain the total heat change across the coil

The temperature of the suction line at the coil and the temperature corresponding to evaporating pressure are used to obtain the degrees of superheat in the vapor leaving the coil. This should be between 5 and 10 F. If it is less, liquid may be reaching the compressor with a resultant loss of capacity or ultimate compressor dam-

age. If it is more than 10 F, the coil is not being fed enough refrigerant, and, therefore, coil capacity will be less than it should be.

The temperature of the liquid line at the condenser and the temperature corresponding to condensing pressure are used to obtain the degrees of liquid cooling. If this is more than several degrees, there is a possibility that air in the system las raised the pressure higher than it should be, giving a false corresponding temperature.

The temperature of water (or air) entering and leaving the condenser together with the quantity measurement may be used as a check on unit capacity provided the compresser input (for gas-cooled hermetic compressors), in terms of Btu, is subtracted.

Let's Try a Sample Complaint

Returning now to the complaints, let us suppose that No. 1 (unit won't run) is being investigated. The service man should not proceed by automatic routine, following

TABLE 2

Refrigeration System Trouble Analysis

Why unit won't cool enough

- Evaporator temperature and pressure too low
 - a) Filters dirty
 - b) Coil dirty
 - c) Fan blades dirty
 - d) Supply dampers and registers closed
 - e) Return grilles blocked
 - f) Air bypassing cooling coil
 - g) Fan speed too low
 - h) Coil superheat too high
 - i) Liquid strainer clogged
 - i) Liquid line valve not fully open
 - k) Condenser pressure too low
- 2. Evaporator temperature and pressure too high
 - a) No coil superheat, liquid reaching compressor
 - b) Outside air percentage too high
 - c) Condenser pressure too high
 - d) Compressor suction valves leak
 - e) Unit too small for load
- 3. Condensing temperature and pressure too low
 - a) Cooling medium (air or water) too much or too cold
 - b) Compressor discharge valves leak
- 4. Condensing temperature and pressure too high
 - a) Condensing medium (air or water) too little or too warm
 - b) Refrigerant charge too much
 - c) Air in condenser
 - d) Condenser dirty

What to do

- Raise evaporator temperature and pressure
 - a) Clean or replace filters
 - b) Clean coil
 - c) Clean fan
 - d) Rebalance with full air flow
 - e) Unblock grilles
 - f) Correct air leakage
 - g) Correct and tighten adjustable pulley
 - h) Adjust or replace valve, find leak, add refrigerant
 - i) Clean or replace filter
 - i) Open valve
 - k) Raise condenser pressure (see No. 3 below)
- 2. Lower evaporator temperature and pressure
 - a) Adjust or replace expansion valve or reduce charge
 - b) Reduce outside, increase return air
 - c) Raise condenser pressure (see No. 4 below)
 - Replace compressor valves or compressor
 - e) Check load, reduce if possible
- 3. Raise condenser temperature and pressure
 - a) Damper air or adjust water regulating valve for reduced flow
 - b) Replace compressor valves or com-
- 4. Lower condenser temperature and pressure
 - a) Increase air or adjust water regulating valve for increased flow
 - b) Reduce charge
 - c) Purge air or recharge system
 - d) Clean or replace

blindly a prepared chart with no thought as to why he is doing what the chart says. Table 1 shows a service chart for what might be a typical air conditioner. It is arranged in a manner which should help the service man to think through his problem. If the air conditioning unit won't run, what, for instance, can prevent it from running? Instead of trying to recall some 20 or more possibilities, an analytical approach would reveal only six major possibilities. These are shown by the numbered headings under the left hand column in Table 1. Complaint No. 2 (unit won't cool) requires more

judgment than does complaint No. 1 in that a number of factors may have to be considered simultaneously. Assuming that the unit is running, we find on Table 2 only four major considerations as indicated by the numbered items. All of these major items involve the operating temperatures and corresponding pressures.

Factors Influencing Performance

In order to understand how various factors influence the operating pressures in a system let us examine Fig. 1 where we have shown the rating of an evaporator coil plotted across the rating of a condensing unit (combination of compressor and condenser). Unit capacity with 95 F water leaving the condenser and 67 F whair entering the evaporator is indicated by the intersection of these lines to be about 37,500 Btuh with a resulting evaporating temperature of 45 F. Suppose that either the air passing through the evaporator coil or the refrigerant being fed to it or both were reduced. Either or both of these changes would cause a reduction in evaporator capacity and might result in a new evaporator capacity line at 67 F who as shown by the line X. The unit capacity is now only 30,000 Btuh, and the evaporator temperature has dropped 10 degrees.

This rebalance at a lower temperature and reduced capacity is exactly what happens to a unit when such things as items a to k under the first heading in Table 2 occur. Items a through g all cause a reduction in evaporator capacity due to a decrease in the air quantity. Items h through k all cause a reduction in evaporator capacity due to a decrease in the amount of refrigerant being fed to the coil. As pointed out on Fig. 1, the decrease in evaporator capacity shows up as a decrease in the evaporating pressure.

Looking again at Fig. 1 and considering the factors a through e under item 2 on the chart in Table 2, we can see how too high an evaporating pressure can also indicate a low system capacity. Item 2a, for instance, says that liquid refrigerant is reaching the compressor. This liquid will boil off to vapor in the compressor crankcase or cylinder. The compressor must pump this vapor, which does no useful cooling, and, therefore, can pump less vapor from the coil. This means a reduction in useful capacity. The condensing unit rating on Fig. 1 would, in effect, move to the left and might balance the evaporator as shown by line Y. The new balance would be 30,000 Btuh, this time at 50 F evaporating temperature.

Outside Air Increases Load

Considering item 2b, it can be realized that excess outside air might raise the entering wet bulb temperature, thereby causing a new balance at a higher evaporating temperature as shown by line Z. Overall unit capacity will be increased, but the capacity available for removing heat from the conditioned space may decrease because such a large portion of the total capacity of the compressor is needed to bring the outside air near to the desirable discharge conditions.

If the condensing pressure and corresponding temperature are too high, the leaving water temperature will rise and unit capacity will drop. For the same wet bulb temperature of the entering air, the evaporating temperature will rise as the leaving water temperature rises. This can be seen on Fig. 1 and is stated on the chart in Table 2 as item 2c.

Item 2d, leaking suction valves, means a reduction of condensing unit capacity which would show up on Fig.

1 by a shift of this rating to the left. The new balance might take place along the previously plotted line Y. The increase in evaporating temperature is obvious under the circumstances.

When a cooling unit is too small for the load, it will not be able to reduce the air wet bulb temperature to the desired level, say 67 F. The condensing unit-evaporator balance would take place along, say, the 69 F wb line at the higher evaporating temperature as indicated on Fig. 1.

Theory vs Practice

Referring again to Fig. 1, it might be presumed that a decrease in condensing pressure and temperature would always result in an increase in capacity. Theoretically this is true. In practice, however, expansion valves or capillary tubes are selected for a certain capacity at a certain pressure differential. If the head pressure gets too low the differential may become so low that the metering device does not function properly. In this case coil feeding breaks down, reducing coil and therefore, unit capacity.

Item 3b in Table 2 as well as items 4a, b, c, and d, all reduce the capacity of the condensing unit with the resulting left shift of the rating lines on Fig. 1. The way in which this reduces unit capacity can be seen by studying Fig. 1.

As explained for Table 1, Table 2 cannot hope to cover every conceivable ailment of an air conditioning system. It does, however, set forth a pattern for analyzing a system which should help the service man to think ahead so that he will make corrections and adjustments with a definite beforehand knowledge as to what effect they will have on system performance.

With regard to complaint No. 3 (unit operating costs have increased), the service man should first put the system in proper working order in accordance with the procedures just outlined. When this has been done, power costs can be reduced by lowering the condensing temperature. If it is necessary to do this by using more water, the relative monthly costs of power and water will have to be studied to determine the most economical operating head pressure. The service man should also be prepared to offer certain suggestions such as the use of awnings, insulation, etc. and perhaps a slightly higher thermostat setting, all of which tend to reduce the air cooling load.

Complaints falling into classification No. 4 (unit too noisy) must be handled on an individual basis. There are usually two types of noise. The first type is caused by air moving through ducts and grilles or registers. The second type is caused by a mechanical vibration or rattle in the equipment or duct system. The service man should have no difficulty in treating the latter type of noise. Noise due to air motion, however, may require the specialized knowledge of an engineer experienced in this field.



1 — WATERPROOF MEMBRANE laid over tamped earth provides a barrier against moisture migration into the crawl space



2 — CRAWL SPACE AIR VOLUME is controllable by the quadrant at the end of the stub duct

What To Do When

Installing a Crawl Space Heating System

THE DEGREE of winter comfort enjoyed by any home owner is directly related to the engineering skill provided by the heating dealer and the craftsmanship of the installers. As new methods of heating are perfected, more comfort is accorded the house occupants. The warm air heating system has been growing constantly as the favorite of home owners until now well over 80 per cent of the homes being erected with central heating systems are using forced warm air systems.

One of the latest methods of heating homes using a partial basement and a crawl space is the crawl space system in which some of the heated air is discharged into the crawl space to provide warm floors in rooms located over what otherwise might be damp, cold areas. Preparation of crawl spaces for this type of heating system is one of the responsibilities of the warm air heating engineer.

A dealer who has been working with various applications of the crawl space heating system is Arthur Fink of Libertyville, Ill. The photographs in this article were taken in August, 1954 in a home completed in 1953. These photographs show that good design and installation procedures will eliminate the dampness usually experienced during the summer in a home built over a crawl space (note the crawl space floor in Fig. 1 is dry and free of dust). Fig. 1 shows how the walls and floor of the crawl space were prepared for a crawl space heating system.

The heating specifications — quoted in part — read as follows:

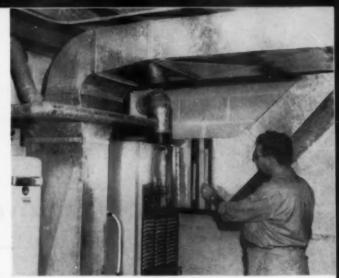
"Preparation of Crawl Space—Entire crawl space area is to be damp proofed with application of 55 lb rolled waterproof membrane laid over tamped earth. Lap all joints 4 in. and carry up exterior walls and to plates. Between concrete and this membrane, on exterior walls, install 3/4 in. thick insulation."

Heating the Crawl Space

A closeup of an exterior wall, with its perimeter diffuser boot and a stub takeoff opening for the crawl space (right elbow) can be seen in Fig. 2. A close examina-



3 — ROUND DUCTS are used to deliver heated air into other areas of the crawl space



4 — FILTERS ARE easily replaced when located in this staggered arrangement. Dealer Arthur Fink is shown checking the filters

Moisture migration into a crawl space is often the basis for complaints from home owners. Here's one way to prepare the crawl space that will improve the humidity condition both during the winter and in the summer.

tion of the photograph of the crawl space stub will reveal a damper quadrant used to adjust the volume of air for this portion of the crawl space.

Whenever interior walls (they were not treated with insulation or waterproof paper) interrupted the rectangular duct system (Fig. 3), round duct was used to supply the perimeter diffusers located in the other crawl space areas. These round ducts are either 5 or 6 in. in diameter, depending upon the volume of air required for the rooms above and the crawl space beyond.

In this crawl space heating system, none of the air discharged into the crawl space is returned to the heating system as it was felt that a slightly higher internal pressure in the crawl space would reduce the infiltration of outside air into the crawl space. All makeup air is taken into the system from an outside intake.

Sealing the Perimeter Wall

One other important feature of preparing the crawl space for heating is the seal between the foundation and

the frame sills. This joint should be sealed with pliable caulking compound around the building perimeter.

Some of the other interesting features of this warm air heating installation are the two 80,000 Btu counterflow furnaces. Each furnace responds to the setting of individual thermostats and supplies heat to separate zones in the 2740 sq ft house. The building is designed around a tri-level arrangement where the 1163 sq ft basement is divided into two rooms of equal size, one room being used for laundry and other utility purposes and the other room as a recreation area. Both rooms are heated by a radial slab supply duct system and common return system.

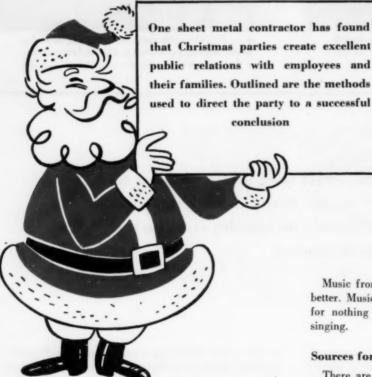
Over the basement section is located the 1040 sq ft sleeping area with its two baths. There are four bedrooms in this space, each heated by diffusers along the outside wall. Supply ducts are 4 and 5 in. round duct.

The filter section for each furnace is located near the furnace in the return air duct (Fig. 4). The staggered arrangement of the filter fitting makes it easy to replace the filters and to obtain maximum air filtering.

[Architects: Cone and Dornbusch; general contractor: Morris Schwerman]

How to Have a

Successful Employees'



By Lawrence E. Gichner **Sheet Metal Contractor**

better. Music provided by the employees is best of all, for nothing brings people together faster than group singing. Sources for Live Music

Music from a phonograph is good, but live music is

There are many sources to tap for live music. Often there are employees or members of their families who play musical instruments. Sometimes there are friends of employees who will gladly lend their talents. If the party is to be conducted on a modest budget, it is sometimes possible to obtain the services of music students who will welcome an opportunity to get audience experience and will accept a token compensation for their performance. If the budget can afford professional talent, the outlay is returned in that much more professional finesse.

Three and five piece orchestras can give zip and spirit to almost any occasion, but we have had parties with only one accordion player present who has done as much at far less expense.

Everybody "In The Act"

There are two kinds of entertainers available - professionals, who must, of course, be secured from outside

A PARTY for company personnel can be a tremendous good will builder for any organization, and December a month of warm sentiments and festivities - is a fine time to hold one. Good will for, and among, those with whom one works is an inestimable asset. Though employee good will cannot be measured, there can be evidence of its presence as well as the lack of its presence.

A jolly party has its advantages in revealing hidden talents in an association that seem to come to light in no other way. A good laugh amid relaxed surroundings makes for mutuality and understanding that bind people closer together.

Shop parties are an old tradition with our firm and through years of experience we have learned a few of the things to do and not to do.

Party

the organization, and talented amateurs, who are often numbered among the firm's employees or whose services may be obtained through one of the employees. We have tried both kinds. We have engaged professional talent from acrobats to sword swallowers, magicians to lasso artists, humorists to knife throwers. But those parties enjoyed the most and talked of the longest by the employees were those in which fellow workers had put on an act.

It is amazing what talent one will find lying dormant amid the company's staff. Asking for volunteer performers through a notice placed on the bulletin board



PANTOMIME PERFORMANCES by employees rate high as favored entertainment by audiences



THE AGE OLD MYTH of Santa Claus still holds a fascination for the children



TALENT IS NOT NECESSARY for a good party

— just a few dyed mops, a little ribbon and aprons
draped around some sheet metal workers

often yields no results because of an innate modesty in most people, but personal inquiry brings surprising results. One of the stunts performed over 10 years ago is still remembered by many of those witnessing the feat. It was an exhibition of strength. One of our foremen drove large nails into the floor and without using his hands in any way pulled the nails out of the floor with his teeth.

Use Work Benches for Stage

So that everyone, both large and small, may see everything that takes place, a number of large wooden work benches are put together to form an improvised stage. The Christmas tree is erected in one corner of the stage and presents are displayed around its base.

Entertainment furnished by employees has included monologues, movie travelogues and a variety of singing and comic acts. Whatever the performers may have lacked in suavity, glibness and professional finish was made up for by the audience's response to an entertainer they knew and liked.

In the early days of our parties we invited only our employees to attend, but now the whole family is included. This arrangement seems to be the best and what our employee's themselves like the most. It gives an employee's wife an opportunity to see the surroundings in which her husband works and to meet his fellow workers and their wives and children. It brings the shop and home closer together and creates a very warm and wholesome feeling.

Always a Santa Claus

The highlight of the party comes when Santa Claus appears and hands out presents to the children. These gifts have previously been entrusted to his care by the parents, and the small fry are amazed that he guesses

their wishes so accurately. So that no child is unintentionally slighted, a few dime-store toys are always kept in readiness.

The grownups receive their gifts through a prearranged plan whereby each person's name is placed in a hat, and a drawing is held at which time everyone draws a name. The value of the present is not to exceed \$1. The presents are collected several days prior to the date of the party and distributed by Ole Santa himself with some appropriate remark. Humorous gifts, selected with thought and tying in with the recipient's personality, job or habits can be a source of merriment and laughter.

We usually assign one of the office girls the job of keeping a record of whose name is drawn by whom and when the present has been received for placement under the tree. It has happened that someone gives a present but fails to receive a gift in exchange. The record will eliminate this embarrassing situation.

When to Hold Party?

There are some sheet metal contractors who wait until Christmas Eve to hold their parties, but we have discovered that the percentage of attendance is considerably increased if the party is held a week in advance of this date. Our employees, like many other people, procrastinate in taking care of their home shopping needs, and they find it necessary to do their gift shopping in lieu of coming to the Christmas Eve party.

Food can be arranged for through a caterer or prepared by the employees. We have found a combination of the two to work to our advantage. To avoid waste we attempt to get an indication from as many of our employees as possible as to whether they are coming to the party, and if so, how many members of their families will come with them. Acceptance by 80 percent of the employees is above average as the pressure of outside interests often conflicts with the evening chosen, and it has been found that 60 to 70 percent is often closer to the actual number attending.

Essential Limitations of Festivities

When we first began having Christmas parties, we were liberal in our policies. We reasoned that it was the once a year get-together for our employees and we would let them do as they pleased. Our reasoning was wrong. Unfortunately, there are some people who do not know their limitations for alcohol, and the results can be annoying, troublesome and disturbing.

If everyone is kept happily entertained, there is no occasion for stimulants or for games of chance. If gambling is permitted, someone is bound to lose and empty pockets do not make for a happy Christmas. We have learned that this form of entertainment is not essential to a successful Christmas party and have ruled it off the program.

Company parties can be happy events for everyone — including the boss.



Useful to Warm Air Dealer

on dwelling units in different areas to direct his sales promotion program

WHEN A WARM AIR heating dealer plans his selling and advertising programs he needs reliable figures upon which to base his expenditures. Also, he wants to know—as nearly as possible—the market he has the best chance of reaching. One of the best sources for this information is the housing data released in 1953 by the Bureau of the Census, part of which was summarized in the May 1953 American Artisan.

The facts and figures are based upon results obtained for the 1950 census. The information given in these reports includes the number of dwelling units in a community or area; how many are relatively new or fairly old; the extent to which they have central heating systems; how many of them are heated by warm air; and what fuels are used for each state, numerous metropolitan areas, urbanized areas, counties, etc.

Reports 152 Metropolitan Areas

The census publications important to businessmen in the heating field are Series H-A and Series H-B. There is an H-A booklet to cover each state. It contains much information of a general nature as well as valuable statistics on all types of heating systems and fuels. The H-B booklets

provide data on "nonfarm housing" characteristics, and there is a booklet for each of 152 metropolitan areas.

Except in New England, each of these metropolitan areas is a county or group of contiguous counties which contains at least one city of 100,000 inhabitants or more. Counties contiguous to the one containing such a city are included in a standard metropolitan area if, according to certain criteria, they are essentially metropolitan in character and are "socially and economically integrated" with the central city. In short, warm air heating dealers and sheet metal contractors located in the principal city of each area would be in position to do business throughout the area. In New England, the city and town were used in defining standard metropolitan areas by applying a population density criterion.

Interpretation of the Data

The number of furnaces and boilers in one- and two-family structures can be considered, for all practical purposes, the same as the number of dwelling units as reported in this census. However, where multifamily structures are concerned (such as an apartment building) the census report cannot be interpreted to repre-

sent the number of heating systems in use because of the many dwelling units contained in a single structure. This is why the statistics on steam and hot water seem to outweigh warm air installations under certain classifications. When analyzed by the types of structures, it is evident that the number of warm air furnaces, except in a few areas, far exceeds that of steam or hot water boilers.

Publications in the H-A (state) and H-B (standard metropolitan area) series are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. Prices range from 25 cents to \$1.75 for the H-A series with most state books being listed for less than \$1.00. The H-B series are available at 30 cents or less.

American Artisan has published periodically condensed versions of the tables from other Census of Housing bulletins, as the information given should be useful to dealers, wholesalers and manufacturers in defining markets and setting sales potentials in the warm air heating field.

This month data is given on Dayton, O., Indianapolis, Ind., Johnstown, Pa., Racine, Wis., Salt Lake City, Utah and Waterbury, Conn. (see the next two pages).

Housing Census Heating Data

Dayton • Indianapolis • Johnstown, Pa. • Racine • Salt Lake City • Waterbury, Conn.

Suggestions on how a warm air heating dealer can use some of the housing data available from the Bureau of Census were given in the May 1953 American Artisan, Localities covered in the reports are metropolitan

areas that are socially and economically integrated with the central city. Data for various areas has been reported regularly in American Artisan since May 1953. Additional reports will continue to appear regularly.

Types of Fuel Used in Centrally Heated Dwelling Units

	Dayton Ohio	I	ndianapolis Ind.		Johnstown Pa.		Racine Wis.	Salt Lake C Utah	ity	Waterbury Conn.	
The area	Greene County	Montgomery County	Marion County	The area	Cambria County	Somerset County	Racine County	Salt Lake County	The area	Litchfield County (Part)	New Haven County (Part)
All dwelling units	16,404	117,123	171,642	78,749	55,431	23,318	34,112	81,490	44,240	3,539	40,701
Number reporting heating											
equipment129,020	15,630	113,390	165,100	74,710	52,935	21,775	31,275	77,780	42,190	3,295	38,895
Central heating 85,495	7,510	77,985	117,070	52,150	37,950	14,200	24,700	56,815	23,320	2,075	21,245
Coal 45,310	3,995	41,315	84,750	43,050	30,480	12,570	17,545	19,550	7,625	720	6,905
Wood 245	30	215	275	115	80	35	110	245	160	30	130
Utility gas 32,745	2,195	30,550	10,335	6,425	5,765	660	1,965	33,325	2,620	140	2,480
Bottled gas 350	55	295	215	330	240	90	60	165	140	35	105
Liquid fuel 5,255	925	4,330	18,805	740	395	345	4,730	2,025	11,985	1,080	10,905
Other fuel 945	280	663	1,785	1,185	835	350	250	1,245	690	65	625
Not reporting 645	30	615	905	305	155	150	85	260	100	5	95

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Own	er occupi	ed	Renter occupied						
			-													
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit	
Stand	ard Met	ropolita	in Area	of Day	ton, O.	, — G	reene ai	nd Mon	tgomer	y Coun	ties					
All occupied units	122,090	77,590	22,325	10,540	6,900	4,735	71,795	63,400	8,395	50,295	14,190	15,565	9,320	6,580	4,64	
HEATING EQUIPMENT	00.101					/-										
Central heating	80,181	51,895	14,042	6,562	3,933	3,749	51,726	45,525	6,201	28,455	6,370	8,999	5,677	3,711	3,69	
Piped steam or hot water	11,318	4,318	1,554	1,649	1,325	2,472	4,663	3,636	1,027	6.655	682	893	1,386	1,251	2,4	
Warm air furnace	68,863	47,577	12,488	4,913	2,608	1,277	47,063	41,889	5,174	21,800	5,688	8,106	4,291	2,460	1,2	
Noncentral heating, with flue	35,614	22,605	6,746	3,122	2,469	672	17,659	15,937	1,722	17,955	6,668	5,359	2,883	2,395	6	
Nonctrl. htng., without flue; or not htd.	4,066	1,771	1,159	540	410	186	1,214	983	231	2,852	788	983	492	410	1	
Not reported	2,232	1,322	377	316	90	127	1,202	960	242	1,030	362	223	268	65	11	
1945 or later	14,987	12,908	788	640	368	283	11,808	11,521	287	3,179	1,387	586	555	368	21	
1940 to 1944	17,931	10,556	2,009	2,249	2,013	1,104	9,580	9,142	438	8,351	1,414	1,656	2,165	2,013	1,10	
1939 or earlier	85,863	52,129	18,843	7,373	4,339	3,179	48,865	41,432	7,433	36,998	10,697	12,814	6,352	4,051	3,00	
Not reported	3,318	2,004	687	278	179	170	1,547	1,310	237	1,771	694	510	250	147	1	
	Standar	d Metro	opolitan	Area o	of India	napoli	s, Ind.	— Mar	ion Co	unty						
All occupied units	164,540	96,115	37,100	11,635	8,260	11,430	96,140	81,255	14,885	68,400	14,860	24,840	9,695	7,765	11,24	
HEATING EQUIPMENT																
Central heating	114,225	64,820	24,130	7,975	6,848	10,452	68,904	58,565	10,339	45,321	6,255	15,797	6,492	6,444	10,33	
Piped steam or hot water	24,114	5,720	2,654	2,528	3,494	9,718	6,324	4,713	1,611	17,790	1,007	1,777	2,048	3,347	9,6	
Warm air furnace	90,111	59,100	21,476	5,447	3,354	734	62,580	53,852	8,728	27,531	5,248	14,020	4,444	3,097	7.	
Noncentral heating, with flue	44,115	27,782	11,889	-3,050	966	428	24,198	20,184	4,014	19,917	7,598	8,249	2,767	911	35	
Nonctrl. htng., without flue; or not htd.	2,759	1,682	549	240	205	83	1,375	1,178	197	1,384	504	461	131	205	1	
Not reported	3,442	1,835	526	370	242	469	1,666	1,331	335	1,776	504	329	305	205	43	
1945 or later	18,360	15,767	1,514	285	361	433	14,734	14,300	434	3,626	1,467	1,153	212	361	43	
1940 to 1944	10,958	8,985	1,653	51	52	217	9.022	8,442	580	1,936	543	1,097	27	52	21	
1939 or earlier	129,792	69,539	32,949	10,533	7,460	10.311	70.151	56,695	13,456	59,641	11,844	21,885	8,738	6,990	10,18	
Not reported	5,418	2,816	981	766	386	469	2,226	1,811	415	3,192	1.005	703	717	361	40	

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

			Total occ	rupied		-	Own	er occupio	ed	Renter occupied						
,	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling	5 to 9 dwelling unit	10 dwelling unit	
Stand	ard Met	ropolita	n Area	of John	stown,	Pa. —	Cambr	ia and S	omerse	et Coun	ties					
All occupied units	68,840	40,590	20,615	4,925	2,095	615	38,300	30,345	7,955	30,540	10.245	13,850	3,890	1,970	5	
HEATING EQUIPMENT								.,,						-,-		
Central heating	47,315	28,130	13,537	3,697	1,452	499	29,593	23,306	6,287	17,722	4,824	8,297	2,775	1,327	4	
Piped steam or hot water	31,175	17,532	9,069	2,821	1,276	477	18,986	14,589	4,397	12,189	2,943	5,531	2,087	1,151	4	
Warm air furnace	16,140	10,598	4,468	876	176	22	10,607	8,717	1,890	5,533	1,881	2,766	698	176		
Nonctrl. htng., without flue; or not htd.	17,471 2,645	1,203	5,889 900	881 304	410 195	63 43	6,915	5,692	1,223	10,556	4,536 620	4,761	806 285	410 195		
Not reported	1,411	1,028	291	43	39	10	946	762	184	465	266	136	24	39		
YEAR BUILT																
1945 or later	4,462 2,313	3,502 1,946	754 263	97 49	109		3,123	2,845	278	1,339	657	476	97	109	,	
1939 or earlier	59,292	33,481	18,951	4,426	1,849	585	1,840 31,834	1,815	7,259	473 27,458	8,906	238 12,766	3,477	1,724		
Not reported	2,746	1,663	648	353	82		1,475	1,111	364	1,271	552	370	267	82		
	Stan	dard M	ermonol	itan An	es of R	cine \	Wie	Racine	Count	**						
All occupied units											2 201	4.004	1 001	***		
All occupied units HEATING EQUIPMENT	28,033	16,315	8,300	2,310	625	485	17,725	14,030	3,695	10,310	2,285	5,085	1,885	385	4	
Central heating	22,366	13,226	6,628	1,567	504	441	14,965	11.827	3 120	2 401	1 200	3 802	1 212	464		
Piped steam or hot water	4,956	2,105	1,381	744	323	403	2,476	1,872	3,138	7,401 2,480	1,399	3,892 879	1,213	323		
Warm air furnace	17,410	11,121	5,247	823	181	38	12,489	9,955	2,534	4,921	1,166	3,013	563	141		
Noncentral heating, with flue	4,611	2,644	1,257	591	81	38	2,173	1,828	345	2,438	816	983	520	81		
Nonctrl. htng., without flue; or not htd.	722 336	312	260	130	20		356	242	114	366	70	146	130	20		
YEAR BUILT	330	132	154	44	20	8	231	132	99	105	***	63	22	20		
1945 or later	2,923	2,797	77	49			2,585	2,534	51	338	263	26	49	***		
1940 to 1944	1,012	1,012					854	854		158	158	***	***	***	,	
1939 or earlier	23,662 386	12,375	8,043 190	2,212	585	447	14,126 106	10,563	3,563	9,536 280	1,812	4,905	1,787	585	4	
St	andard 1	Metropo	olitan A	rea of	Salt Lal	ke City	. Utah	— Salt	Lake	County						
All occupied units	74,970		10,775	5,590			-			-		7.120	4 810	4 100		
HEATING EQUIPMENT	74,970	47,743	10,773	3,390	4,405	0,477	45,655	40,765	4,890	29,315	6,980	7,130	4,830	4,100	6,2	
Central heating	54,286	33,647	7,114	3,972	3,508	6,045	34,239	30,425	3,814	20,047	3,222	4,274	3,388	3,246	5,5	
Piped steam or hot water	12,739	3,225	1,066	1,338	1,882	5,228	3,479	2,758	721	9,260	467	663	1,202	1,751	5,	
Warm air furnace	41,547	30,422	6,048	2,634	1,626	817	30,760	27,667	3,093	10,787	2,755	3,611	2,186	1,495		
Noncentral heating, with flue Nonctrl. htng., without flue; or not htd.	16,867 2,712	11,444	3,097	1,425	727	174	9,288	8,362	926	7,579	3,082	2,377	1,289	683		
Not reported	1,108	896	499 65	150	171	132 106	1,310 817	1,223 756	87 61	1,402	537 140	457 23	131	171		
YEAR BUILT	-,	0,0				200	027	7.20	01	474	1.40	4.5				
1945 or later	11,491	9,637	1,131	310	222	191	9,481	9,023	458	2,010	614	705	276	222		
1940 to 1944	6,446	5,355	646	226	191	28	5,263	4,992	271	1,183	363	407	194	191		
Not reported	2,195	31,749 1,002	8,593 404	4,544 511	3,960	5,992 246	30,041 868	26,081 667	3,960	24,797 1,327	5,668	5,720 298	3,942 416	3,655	5,	
sl-1w	1*		/ Part													
Standard Med			of Wat	erbury,	Conn	- Part	s of Lit	chfield a	ind Ne	w Have	n Coun	ities				
All occupied units	41,410	15,735	7,580	11,215	4,725	2,155	20,105	13,900	6,205	21,305	1,835	4,395	8,585	4,475	2,	
HEATING EQUIPMENT	01 7	10 /0-														
Piped steam or hot water	21,758 14,580	7,554	3,488 2,472	3,228	1,271	1,291	14,990	7,027	3,438	6,768	928	1,457	1,960	1,188	1,	
Warm air furnace	7,178	4,926	1,016	958	163	1,176	9,477	7,027 4,525	2,450 988	5,103 1,665	527 401	1,018	1,385	1,025	1,	
	15,910	2,634	3,385	6,509	2,710	672	4,228	1,980	2,248	11,682	654	2,359	5,433	2,564	,	
	3,021	366	595	1,283	720	57	599	239	360	2,422	127	509	1,044	699		
Nonctrl. htng., without flue; or not htd.				107	23	135	292	131	161	433	127	69	149	23		
Nonctrl. htng., without flue; or not htd.	725	258	112	197	6.7	627	676									
Noncentral heating, with flue Nonctrl. htng., without flue; or not htd. Not reported YEAR BUILT 1945 or later	725								110	855	207	44	67	416		
Nonctrl. htng., without flue; or not htd.		2,636 1,795	165 302	87 145	416 269		2,449	2,339	110	855 1,011	297 27	55 220	87 145	416		
Nonctrl, htng., without flue; or not htd. Not reported YEAR BUILT 1945 or later	725 3,304	2,636	165	87	416				110 82 5,929	855 1,011 18,898	297 27 1,430	55 220 4,121	87 145 8,122	416 269 3,619		

Where Is Our

Answers to be offered at the 41st Annual Convention of the



OPPORTUNITIES warm air heating field outlined by C. B. Phillips



FIELD RESEARCH, its importance to the industry, described by C. W.

EVERY PROGRESSIVE warm air heating and residential air conditioning dealer and sheet metal contractor wants to make plans for his business as far into the future as possible. To do so, he must seek information from every available source, to evaluate the information and apply his findings to his own particular operation. This year the National Warm Air Heating and Air Conditioning Association, at its annual convention to be held in Cleveland December 1 and 2 at the Hotel Cleveland, will provide many of the answers needed.

The program is built around the theme Where Are We Going? Answers to be offered to this important question will come from people who have made studies of their respective fields on a national basis. Others will report on the technical advances achieved through field and laboratory research.

Research Data Made Available

The convention will open with an address by President C. B. Phillips, whose subject, Progress and Our Opportunities, will keynote the convention theme. Other speakers will include Ned Cole, Austin, Tex., home builder, who will make the first industry report on the investigations conducted at the Air Conditioned Village in Austin, where a 22 house experiment in modern living is being subjected to close scrutiny by all industries connected with the building of a home and the equipment needed to make it comfortable the year 'round.

C. W. Nessell, chairman of the NWAHACA field research committee, will describe tests that have been conducted by the mobile laboratory in California, Texas and other parts of the country. He will point out some of the installation practices followed by dealers when installing warm air heating and residential air conditioning systems. The results of these tests will be used to develop better ways to serve the warm air heating industry's cus-

Other research information will be presented by H. T. Gilkey, D. R. Bahnfleth and C. F. Chen. These reports will cover perimeter loop cooling, small pipe perimeter heating and pressure losses of perimeter fittings and diffusers.

Merchandising Gets Attention Too

The sales-minded delegate to the convention will hear H. E. Riley, chief of U. S. Labor Department's Division of Construction Statistics, who will speak on the special importance of analyzing statistical information to deter-

Industry Going?

National Warm Air Heating and Air Conditioning Association

mine the present and potential market for the warm air heating industry. Also, John Corrigan, a business economist, will recommend methods that can be used to cut down profit losses in his address, *How to Build Profit Value in Your Sales Dollar*. Many other speakers with messages of importance to the warm air heating industry will appear on the two day program.

Program

41st Annual Convention

Morning, December 1, 1954

Progress and Our Opportunities
C. B. Phillips, president NWAHACA
Rehabilitation and Modernization Market
John Ryan Doscher, Life Magazine
Objectives of the Air Conditioned Village
Ned Cole, National Association of Home Builders
Preliminary Results, Air Conditioned Village Investigations
C. W. Nessell, chairman, field investigation committee

Afternoon, December 1, 1954

The Building Market Outlook for 1955
H. E. Riley, Bureau of Statistics, U.S. Dept. of Labor
Design for Comfort
Edith Brazwell Evans, Living for Young Homemakers Magazine
How to Build Profit Value in Your Sales Dollar
John D. Corrigan, business economist
Now is the Time to Decide
Harry C. Gurney, chairman, publicity and merchandising com-

Evening, December 1, 1954

Cocktail hour — 5:30 p.m.

Morning, December 2, 1954

Reports from committee chairmen
Membership, G. W. Denges
Industrial and Commercial Heating, L. S. Redford
Research Advisory, F. L. Meyer
Legislative, C. L. Sapp
Manuals 1, 2, 3, 5 & 8, E. B. Root
Manual 4, W. C. DeRoo
Manual 9, R. M. Wallis
Manual 10, C. L. Grandstaff
Manual 11, L. A. Miles
Indoor Comfort Conference, N. T. Hess & G. A. Voorhees
College Short Course, B. F. McLouth

Afternoon, December 2, 1954

Investigation of Small Pipe Perimeter Heating
H. T. Gilkey, University of Illinois
Cooling Research Using a Perimeter-loop Duct System
C. F. Chen, University of Illinois
Small Pipe Perimeter Cooling Investigations
D. R. Bahnfleth, University of Illinois
Pressure Losses in Perimeter Fittings and Diffusers
H. T. Gilkey, University of Illinois

ADJOURNMENT



MARKET OUTLOOK for 1955 based upon statistical information analysed by H. E. Riley

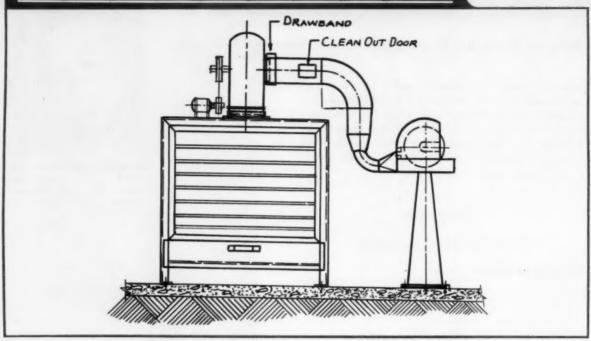


RESIDENTIAL AIR conditioning and how it fits into the home construction industry explained by Ned Cole



ADDING THESE reports into an overall picture is Harry C. Gurney, who says, "Now is the Time to Decide"

HUGH REID'S SHEET METAL PATTERN



1 DUST COLLECTING system for a grinder requires a close fitting hood guard and a method whereby cleaned air can be returned to the working area

Details for Making a

Grinder Suction Hood Guard

DUST COLLECTING SYSTEMS for industrial applications must meet many varying requirements. This month's problem deals with the fabrication of a suction hood for a grinder, shown at the right in Fig. 1. The remainder of this dust collecting system, which was recently specified for use in an automobile manufacturing plant, will be covered in future articles. A brief description of the system used will be of interest.

The dust from the grinders is picked up at the hood and conveyed through the duct at a velocity of 3500 fpm to the unit collector. In the collector the velocity is decreased to about 200 fpm. At this low velocity the dust will settle on the cloth type filters which are arranged in zigzag fashion across the discharge opening. The dust-free air is then discharged into the building, thus reducing the quantity of outside air that must be brought into the building and be tempered before discharging into a work area.

Hoods used on grinding, buffing and polishing ma-

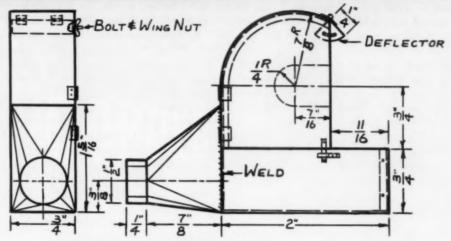
chines should be close fitting to pick up as much of the dust as possible. It also is important that an easy means for changing the grinding wheels be incorporated in the design of the hood. A door section in one side of the guard will make the changing of a wheel a quick and easy operation.

The dust collector hood and elbows should be constructed of sheet metal that is at least 2 gages heavier than that used in the straight section of ductwork.

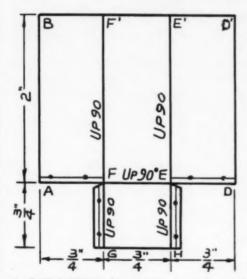
Given the end view (Fig. 2, left) and the front view (Fig. 2, right) of the grinder suction hood, the pattern can be developed from the following procedure.

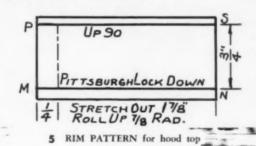
Layout for Box Pattern, Fig. 3 -

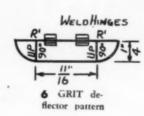
a) Draw a vertical line and establish point A on this line. Measure 2 in. above point A and establish point B. From point A draw a line to the right and perpendicular to line A-B. On this line measure 3/4 in. from point A.

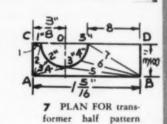


2 END VIEW (left) and front view (right) of the suction hood guard

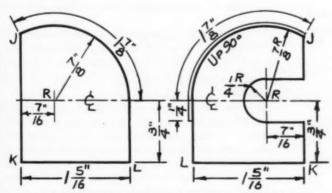






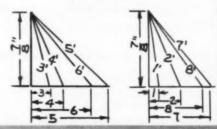


3 BOX PATTERN for collecting heavy dust particles



15 8 DEVELOPED HALF pat-

tern for transformer



DOOR PATTERN (left) and back pattern (right) for hood

TRUE LENGTH LINES

Mark this point F. From point F measure 3/4 in. to the right on the line and establish point E. From point E, measure 3/4 in. to the right on the same line and establish point D.

b) Through points F, E and D draw lines parallel to line A-B. From point B extend a line to the right and perpendicular to line A-B. This line will cross the lines extending through points F, E and D. Where the lines cross, mark the points F', E' and D' as shown.

c) From point F on line A-D measure 3/4 in. downward and establish point G. From point E, follow the same procedure and establish point H. Add allowances for joints and mark pattern for forming.

Back and Door Pattern Layout, Fig. 4 -

a) Draw the horizontal line marked CL and to the left and perpendicular to this line, as shown in Fig. 4 (left), draw a vertical line. From line CL measure 3/4 in. downward and mark the point K. Through point K draw a 1 5/16 in. line parallel to the center line and mark the point L. From point K draw a line perpendicular to line K-L, designating this line as J-K.

b) From line J-K and working on the center line, measure 7/16 in. to the right and mark the point R. With R as center and radius $\frac{7}{8}$ in. (Fig. 2 right), draw a long arc to intersect the center line and line J-K.

c) Repeat the procedure for steps a and b above, but reverse the pattern to form a back pattern as shown in Fig. 4 (right).

d) From point R on the back pattern and radius ¼ in. (Fig. 2 right), draw a 180 deg arc (90 deg on each side of the center line). Draw lines tangent to the arc and intersecting line J-K.

For the Rim, Fig. 5 -

a) Draw a horizontal line and establish the point M. From the door pattern, Fig. 4, transfer lengths ½ in. and 1½ in. to the right of point M on this line. Mark this point N. Through points M and N draw lines perpendicular to line M-N. Measure ¾ in. on each line and establish points P and S. Draw the line P-S.

Laying Out the Deflector, Fig. 6 -

a) Draw a rectangle 11/16 in. × 1/4 in.

b) Mark the top horizontal line corners R'. With each point R' as center and 1/4 in. as radius, draw 90 deg arcs from the lower horizontal line. Extend the top line to intersect the 90 deg arc lines.

To Construct the Transformer Fitting, Fig. 7 —

a) Draw a 1 5/16 in. × 3/8 in. rectangle and mark the corners A, B, C and D. From point C measure 3/8 in. toward point D. Mark this point as O. With point O as center and a 1/4 in. radius, draw a half circle into the rectangle. Divide the half circle into four equal spaces and mark the points 1", 2", 3", 4" and 5".

b) Draw measurement lines from point A to points 1", 2" and 3", also from point B to points 3", 4" and 5". Mark these lines as 2, 3, 4, 5, 6 and 7.

c) On line C-D mark the distance C-1" as 1 and distance 5"-D as 8.

d) Draw two right angles. On the vertical legs measure the given length of the transformer which is 7_8 in. (See Fig. 2, right). Transfer lengths 1, 2, 7 and 8 to the horizontal leg of one right angle and lengths 3, 4, 5 and 6 to the horizontal leg of the other right angle. Lines drawn from the points on the horizontal line to the vertical height point on the vertical line will represent the true length lines.

e) Mark the true length lines 1', 2', 3', 4', 5', 6', 7' and 8'

Developing the Half Pattern, Fig. 8 -

a) Draw a 1 5/16 in. horizontal line and mark the points A and B.

b) With A as center and true length line 4' as radius, draw an arc. With B as center and true length line 5' as radius draw an arc cutting the arc drawn from point A. Mark the point 3".

c) Measure true length line 3' and from A on the layout draw an arc to the left of line 4'. Measure chord 2"-3" on the half circle (Fig. 7) and working from 3" on the layout cut the arc drawn from point A. Mark this point 2".

d) Measure true length line 2' and from point A on the layout, draw an arc to the left of line 3'. Measure chord 1"-2" on the half circle (Fig. 7) and working from point 2" on the layout cut the arc from point A. Mark this point 1".

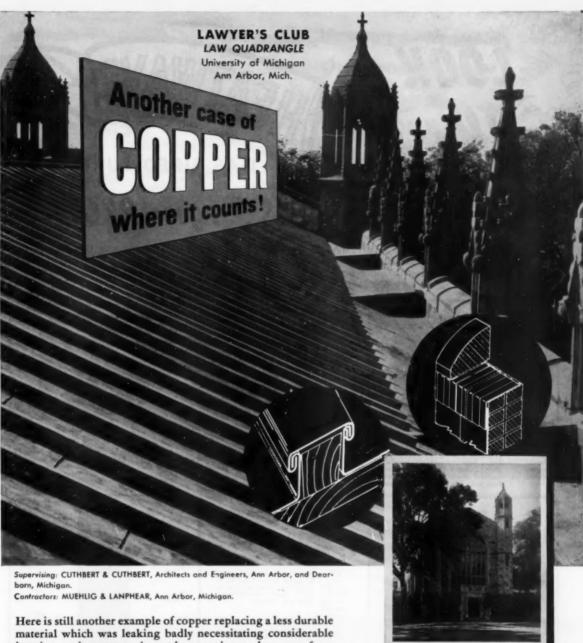
e) Measure true length line 6' and from B on the layout draw an arc to the right of line 5'. With chord 3"-4" (Fig. 7) as radius and working from point 3" on the layout, cut the arc drawn from point B. Mark this point 4".

f) Measure the true length line 7' and from point B on the layout draw an arc to the right of line 6'. With chord 4".5" (Fig. 7) as radius and working from point 4" on the layout, cut the arc drawn from point B. Mark this point 5".

g) With true length line 8' (Fig. 7) as radius and point 5" (Fig. 8) as center, draw an arc to the right of line 7'. With true length line 1' as radius and point 1" as center, draw an arc to the left of line 2'. With B-D (Fig. 7) as radius and points A and B (Fig. 8) as centers, draw arcs cutting the arcs drawn from points 1" and 5". Through the points draw the pattern outline.

Calculate the collar stretch out by multiplying the given diameter by 3.14.

Add allowances for seams and joints and mark patterns for forming.



interior maintenance. A costly experience, but one from which you can profit. For the vital spots use the metal that has proven its enduring qualities for centuries . . . copper. In fact, there is not another metal or alloy that has all the outstanding construction characteristics of copper.

On the roof of the Lawyer's Club 4,000 lbs. of 32-oz. Revere Copper was used to line the gutters, 10,000 lbs. of 16-oz. Revere Lead-Coated Copper for the batten seam roof and 500 sq. ft. of Revere-Keystone* Lead-Coated, 16-oz. 3-Way, Thru-Wall Flashing under the coping stone.

To make sure of a long-lasting and trouble-free installation, the architect and contractor worked closely with Revere's Technical Advisory Service on roofing and flashing techniques. If you have technical problems, your Revere Distributor will put you in touch with Revere's Technical Advisory Service.

IN CIRCLE above left is cut-away section of batten seam roof of Revere Copper installed on the Lawyer's Club. Circle at right shows detail of Revere-Keystone 3-Way Thru-Wall Flashing of copper that will seal out weather, prevent re-

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Founded by Paul Revere in 1801 230 Park Avenue, New York 17, N.Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif., New Bedford, Mass., Rome, N.Y. —Sales Offices in Principal Cities, Distributors Everywhere SEE "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS



to BOOST your SALES ... your PROFITS

Whatever your heating problem, HEATWAVES provides the solution in a type and size that will meet every requirement of each particular installation! Every model is FACTORY ASSEMBLED, delivered as a packaged unit, ready to install, and every HEATWAVE is COMPETITIVELY PRICED! Further, every model carries a 10-Year Factory Warranty!



The HEATWAVE HORIZONTAL . . .

STU Input 80,000 80,000 for space saving installations in homes without basements; installs in attics, under floors, in service porches, ottoched garages; suspends from joists in homes with basements.



The HEATWAVE COUNTER-FLO .

BTU

for perimeter and under floor heating; can be installed in closet, alcove or utility room with minimum of duct work. Very economical installation.



66

996

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The HEATWAVE HI-BOY ...

designed to meet the need of better home heating at lower cost. Completely auto-matic. Built-in draft diverter. BTU

EVERY HEATWAVE MODEL:

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Southwest manufactures a complete line of 2 and 3-ton Residential Air Conditioners for use as companion units with any Forced Air Furnace.

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Finest Heatwave quality, fits in 16" centered stud spacing. Ideal for homes, apartments, offices, stores and motels. Minimum in-stallation cost.



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NEW FREE SALES TOOL!

HEATING CONTRACTOR A HEATING AND COOLING EXPER



NO ONE IN THE HEATING BUSINESS CAN AFFORD TO BE WITHOUT THIS COMPREHENSIVE BOOK ON HEATING AND COOLING.

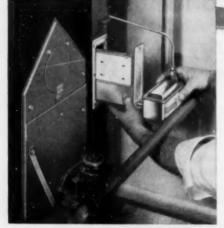
Here is a revolutionary new method for figuring both heating and cooling installations. It is so simplified and yet so safe that it can be used for both heating and cooling in residential jobs.

Complete capacity tables are given for various climatic conditions.

Another feature is a comparison table of relative advantages and disadvantages of four different types of heating systems. Complete Thermo-Base installation instructions are also illustrated and described in this profusely illustrated catalog.

Mail Coupon NOW! GERWIN INDUSTRIES, INC., Michigan City, Indiana ☐ Please send me FREE Thermo-Base Catalog. ☐ Please have your representative call. America's finest extended baseboard air distributors! State

No plenum too small for the CONVECTOR HUMIDIFIER



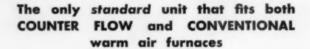
FOR COUNTER FLOW WARM AIR FURNACES

Maid-O'-Mist Convector Humidifiers, because of their narrow 36 inch wide trough design, can be installed in counter flow warm air furnaces having a minimum air passage of 3 inches. As shown above, the humidifier can be installed on either side of the furnace directly above or below the burner — depending on furnace design.



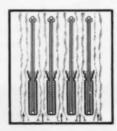
FOR CONVENTIONAL WARM AIR FURNACES

Installation time can be reduced by 50%. You just cut opening in plenum and make water connections. 13 sizes available with evaporation capacities of 1 to 10 gals. of water per day. Get full information on these competitively priced units from your jobber, or write for Bulletin 701-B.

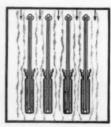


Unlike ordinary warm air furnace humidifiers, this Maid-O'-Mist Convector Humidifier has no flat bottom to block the flow of warm air. Maid-O'-Mist's individual 3/8" copper water troughs are spaced 1" apart to allow unrestricted air flow between the evaporator pads. This exclusive design provides greater evaporating working area so necessary in short cycle modern heating. That's why Maid-O'-Mist Convector Humidifier is ideal for the small plenums of all modern warm air furnaces . . . conventional, counter flow and year around air conditioning units.

Patented Evaporator Pads are constructed of corrugated long grain paper fillers with outer layers of asbestos. The corrugations form capillary tubes which greatly increase the water absorbing qualities of the pads.



Note how Maid-O'-Mist's exclusive individual trough design allows the air to flow freely between the evaporator pads . . . whether in an upward motion for conventional furnaces, or down in counter flow furnaces. The entire area of each of the large evaporator pads is in direct contact with the warm air flow thus providing 30% more evaporation surface.





30% MORE EVAPORATION AREA



INSTALLATION TIME



WATER LINE CONTROLS . HEATING SPECIALTIES

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NOW-from **SUNBEAM** by American-Standard

a new line of compact, utility units

installation tested*

to save you time and money

With the New Wyandotte, Sunbeam brings you a complete line of compact, gas utility winter air conditioners. This ultramodern line offers famous Sunbeam quality... competitively priced for high-volume sales. And every unit is *installation tested* to assure easy and immediate operation upon installation... continuous operation without unnecessary call-backs.

* The "installation test" is only one part of Sunbeam's famous 4-point testing program that includes:



Testing of heating elements under 4 to 6 pounds of air pressure.



Testing of gas manifolds under 4 to 6 pounds of air pressure.



Factory operation of automatic pilot valves and quietaction gas valves.



And finally "Installation Testing" after factory assembly of unit.



This 4-point inspection adds up to the industry's most thorough test. Each unit is given a final testing after it is completely assembled, including fire testing and operation of blower and controls.

Ideal for both new homes and modernization jobs, the New Wyandotte comes in 7 narrow sizes. Smallest size is only 131/8" wide! 200,000 B.T.U. size, completely assembled, fits through an average door! It's factory-assembled and completely wired, including all controls. Blower is mounted to slide out like a drawer. All servicing and cleaning can be done from the front.

THE NEW WYANDOTTE fits every requirement you have for a gas-fired utility-type winter air conditioner. Get complete information about this ultramodern line from your Sunbeam distributor. He is listed under "Furnaces" or "Air Conditioning Equipment" in the Yellow Pages of your phone book. SUNBEAM AIR CONDITIONER DIVISION, American Radiator and Standard Sanitary Corporation, Elyria, Ohio,

American-Standard sunbeam air conditioner division

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SHOW WINDOWS should display equipment which is both familiar and eye catching, since "people are interested in learning more about something already familiar rather than something entirely new"

"Let 'Em Know What

Some merchandising tips covering everything of two articles condensed from talks given

WARM AIR HEATING, residential air conditioning and sheet metal dealers comprise a young industry. Yet nationally, they are installing over 80 per cent of the central heating systems. What is responsible for this wide public acceptance?

Of course, the main factor is the quality of the work which they have done. However, this would count for much less if it were not coupled with active merchandising programs. Merchandising is making the public increasingly aware of its heating and cooling needs, and of the industry best qualified to meet these needs.

What, exactly, constitutes good merchandising? The usual dictionary definition of the term is "to promote the sale of a product, also to package and advertise." The

term "package" is here intended to mean preparing an attractive presentation of the product—not merely wrapping it up. "Advertise," in dictionary terms, means to bring to public notice—to inform. Thus, from the heating, air conditioning and sheet metal dealer's point of view, to merchandise is to present an attractive package, to create interest and to tell the public about the product.

Offer Prospect the Right Choices

The first thing to remember in merchandising products is that everyone is a prospect. Don't you decide that the prospect doesn't need your product; make him convince you that he doesn't need the product. This is hard



SHEET METAL DEALERS can make use of special displays of fittings and other equipment which should be varied from time to time to suit the season and other factors

You've Got to Sell"

from show windows to letterheads — in the first by Artisan's editor at various dealers' meetings

for him to do, especially if you follow an important selling rule: Give the customer a choice between two models of your product instead of a choice between one item and nothing.

As a heating dealer, tell your customer that you handle both highboy furnaces and lowboy furnaces, that in his case (for example) you believe the lowboy furnace is best because the existing duct system can be cut into the plenum chamber more easily. But talk as if it is a foregone conclusion that he wants only your furnace and that it is merely a matter of which type he wants.

As a sheet metal contractor, offer the customer a choice between an axial type exhauster and a centrifugal blower for his ventilation system, but let him know you are planning to install the kind of system he needs, that all he need do is select one or the other. This is good selling psychology and should be part of every merchandising program.

Attractive Shop Windows For Eye-Catchers

Most sales are the result of the preparation that preceded the initial lead. Thus, a merchandising program must begin in the mind of the dealer. Suppose you have decided to extend your selling program. The first thing you must do is to think of a plan that will fit your financial limits. The plan should be extensive enough to reach every person who can either become a customer

The Proved metal for roofing and construction.

Hussey Copper Roofing Hussey Copper Flashing

Hussey Copper Roof Drainage Products Builders' Specialties

Install with confidence!

-its history proves its durability

Costs less because it serves longest!

Fabricates with ease!

Solders and Brazes!

Reserve for copper the jobs that copper has always done best. No other metal has the centuryold history of durability and complete dependability under the most severe weathering conditions. Only copper has the extreme flexibility that permits easiest and most perfect fabrication on or off the job site. There are "best" materials for everything-for roofing, drainage work and weather-proofing it's HUSSEY COPPER.

C. G. HUSSEY & COMPANY (Division of Copper Range Co.)

ROLLING MILLS AND GENERAL OFFICES PITTSBURGH 19, PA.

WAREHOUSES Pittsburgh, Cleveland, St. Louis, Philadelphia, New York, Chicago, Cincinnati

or can lead your salesmen to someone who will. Let's look at a sample plan for a contractor.

The first step is to make your shop windows attractive enough so that people will want to stop and look them over. A neglected show window not only indicates a lack of interest on the part of the business firm — it tends to discourage customers from doing business with the firm. The window must have appeal that can be understood by and be attractive to the average citizen. Through the years, numerous surveys and public opinion polls have shown that people are interested in learning more about the things they know something about rather than studying about matters of which they know nothing. Thus, the dealer's display window should show some familiar equipment, but should be changed often and a different twist used so that the change is noticeable.

Equipment which the customer understands and which has eye appeal might include such items as furnaces, conversion burners, humidifiers, thermostats, incinerators, water heaters, summer air conditioners, etc.

Achieving Variety

Variety can be achieved in a number of ways — with color (using bright shades), with different lighting effects (using spotlights, etc.), and with moving models.

In addition, the motif can be varied. Some of the decorations can be elaborate, others conservative. This approach calls for good judgment on the part of the dealer or contractor because some displays need a dash about them while in others, the message is lost when there are too many distracting influences.

One of the most effective window displays I can recall was made by a jeweler who ran alternately silver and gold streamers from each of the four sides of the window to a black velvet pillow near the center of the window. In the center of this pillow was a diamond engagement ring. It was a simple display, but the diamond really shone to advantage. In the corner of the window there was a white card with small, plain lettering that said, "Our diamonds are the brightest!"

It was suggested to one dealer that he follow the jeweler's lead in arranging a window display for a new model incinerator. He used a glossy black cardboard and placed the porcelain white incinerator in front of it. To tie the window frame to the object, he used red and green twisted streamers, (It was two weeks before Christmas.) He put a plain card at the foot of the incinerator that carried this message, "Dress up the basement this year!" He sold 18 more incinerators during the following two weeks than in any previous period.

The sheet metal contractor doesn't always locate his shop on a main thoroughfare, and rarely has large display windows. If he does, it is because of the nature of the building when it was originally built. But those who have display windows should keep them clean and inviting and should change them frequently. Variety can be achieved by putting in different sizes of blowers, some special cabinet that has been recently completed,

or an interesting fitting that has eye appeal. Those sheet metal contractors who have made an effort to keep their windows attractive and their entranceways inviting report that the customers who call at the shop always seem to act as if they are in a store and that a buying attitude exists that did not exist before the front of the building was made attractive.

Letterheads a Good Advertising Tool

Once you become known in your community as a dealer or contractor, it becomes an obligation on your part to keep your name before the public. All business transactions should be capitalized upon for this purpose—even the sending of bills. An effective letterhead carries a great deal of punch. The letterhead can keynote the character of the business it represents. The overall appearance should be one of neatness but it also should let the reader know what field your business covers.

There are four factors to be considered when planning a letterhead: Type face, layout, color and artwork.

Each of these can be worked together to form a message that can be almost as important as the body of the letter itself. There are many kinds of type face — roman, modern, script, novelty, etc. — each with an individual personality which evokes some definite impression. For example, roman type faces usually portray dignity; modern type faces are streamlined and easy to read; script type faces can be used for both informality and formality; and novelty type faces are best suited to creating unusual effects.

In the same manner, the layout or arrangement of the type, the art work or decorative ornaments can range in style from ultra-conservative to modern and futuristic. By using the right layout, you can evoke the exact impression you wish. You can emphasize a single word or an entire line of copy. You can accomplish the unusual or you can convey the impression of dignity and strength.

There is this saying about the use of color: "So easy to use... so easy to abuse." Color should be used primarily for emphasis, for spotlighting. Color should have a definite purpose in the planning of the letterhead.

Art work, like color, is something which is not essential in a good letterhead, but can often add a distinctive touch. A sketch, hand-lettering or a decorative motif will add interest. Also available are many types of ornaments and decorations which the printer can supply and which can be used artistically to dress up letterheads.

In general, letterheads and other printed matter should be dignified and done in either script or block lettering, the size of type being varied for emphasis. Simplicity is not only the keynote of refinement, but it will keep the cost down, it will be attractive and in good taste, and, most important, will create a good public impression.

The planning of your letterhead and other printed pieces may well call for consultation with a printer, a commercial artist, or an advertising expert. Advice from competent, experienced promotional-minded men can pay dividends in attaining the desired results.

CRANE offers a complete line of Warm Air Heating







Hi-Boy Furnaces— Gas or Oil

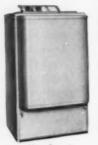
Counterflow Furnaces — Gas or Oil



Gravity Furnaces— Gas or Oil



Steel Gravity



Year-Round Air Conditioners





Horizontal Furnaces— Gas or Oil



Gas Conversion
Burners







Gas Unit Heater



Room Air Conditioners



Warm Air Baseboard



Floor Diffuser Register



Controls

NOW! Everything from one convenient source of supply!

Crane offers oil- or gas-fired basement furnaces, hi-boys, counterflows, gravity furnaces, industrial furnaces, horizontal furnaces, conversion burners...unit heaters...controls...duct and fittings, registers and grills, warm air baseboard...year-round air conditioners, summer air conditioners, room air conditioners...everything for warm air heating!

When it comes to Warm Air Heating, more and more alert dealers are concentrating on Crane equipment.

It simplifies their work. They find it easier and less expensive to order everything from one source, and the Crane line is complete in every detail, offering units for every heating need.

From your customers point of view, they will be pleased with the prompt delivery, and pleased with the equipment you supply them... for whatever you get from Crane is outstanding for engineering, design, and built-in quality.

You can see why it is—when you count on Crane—you can count on better business, too!

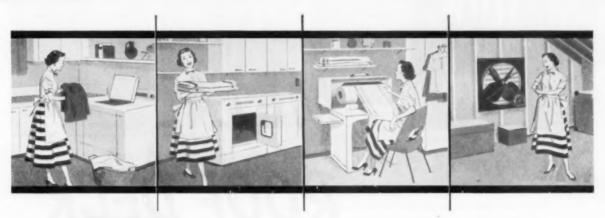
Crane Branches and Crane Wholesalers located in principal cities.

CRANE CO.

GENERAL OFFICES: 836 SOUTH MICHIGAN AVE., CHICAGO 5 VALVES . . . FITTINGS . . . PIPE . . . PLUMBING AND HEATING



THE MOST IMPORTANT FACTOR IN YOUR BUSINESS...





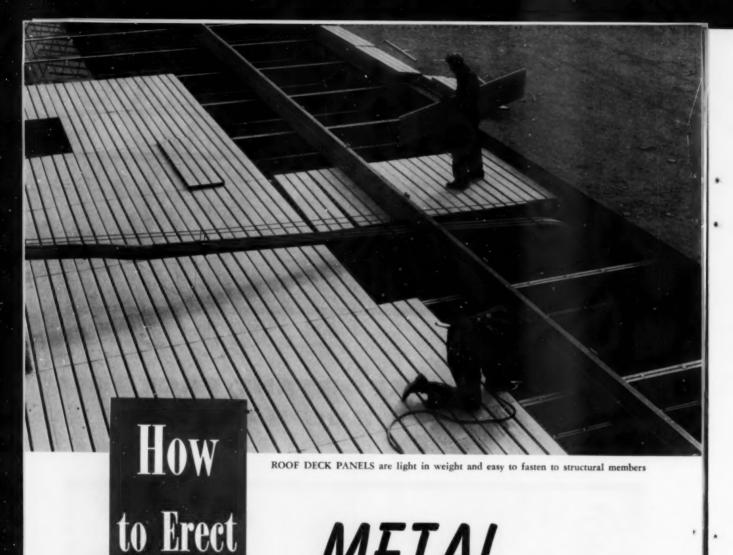
A COMPLETE LINE OF RUGGED FRACTIONAL HORSEPOWER APPLIANCE MOTORS

is a satisfied customer! That's why it is important to use the best electric appliance motor you can find . . . a Packard Electric motor.

For, when you standardize on motors carrying the worldfamous Packard Electric name, you are taking the sure way to customer satisfaction. Appliance manufacturers who have been Packard customers for many years know this to be true. They know, too, there is no substitute for 37 years of motor-building experience.



Packard Electric Division General Motors Corporation Warren, Ohio



METAL ROOF DECK

The welding of the first plate and the follow-through with top and side plate placement is described along with advantages of this strong, lightweight material THE ADVANTAGES of metal roof decking over other types of roof supporting materials, its rapid acceptance by builders of industrial plants and commercial buildings and how to estimate and erect this product were explained by A. T. Krueger, Inland Steel Products Co., to members of the Sheet Metal Contractors' Association of Wisconsin at a recent district meeting held in Kenosha. Mr. Krueger said, "Roof deck is a sheet metal base for roof construction which obtains its performance merits from interval rib formations. Roof deck contributes to substantial construction economies through its relatively light weight, affording savings on weight and cost of supporting steel

(This article continued on page 112)



UTILITY ROOM installation of vertical furnace, is attractive, compact.

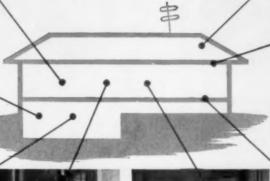
choose Janitrol



IN ATTIC, a horizontal gas-fired



ADD SUMMER CONDITIONING unit, right, to existing winter condi-



OVERHEAD location of horizontal conditioner saves valuable floor



BASEMENT MODERNIZATION with space-saving conditioner gives more "hobby" room.



OFF-KITCHEN CLOSET provides space for both furnaces and water heater.



FURNACE ROOM in ranch home with warm air perimeter system.



CRAWL SPACE permits use of a suspended horizontal conditioner.

to fit any place...save space

Offer more installation flexibility with the complete Janitrol line of automatic conditioners! These typical installations show how the various units can be "spotted" practically any place in the home without sacrificing valuable floor area. Offer any choice of fuel, too. Models are available for either warm air or boiler systems; oil or gas-fired. And every unit is built to give the famous Janitrol trouble-free performance that as-

sures complete customer satisfaction. So why not concentrate on the best in the business? It will pay you back in many ways.

Check Janitrol Year 'Round Conditioning for more profit possibilities in the mass market of medium-priced homes, retail stores and small business buildings. All Janitrol Summer Conditioners can be economically "twinned" with new or existing forced warm air systems.

WRITE TODAY ABOUT JANITROL REPRESENTATION IN YOUR AREA.

Janitrol Janitrol

SURFACE COMBUSTION CORP.

400 Dublin Ave., Columbus 16, Ohio In Cenede: Alver Simpson, Ind., Torento 13.

"Rheem furnaces mean fewer service calls—bigger profits"



says Jim Kirby Kirby Sheet Metal Works, Inc. Chicago, Illinois

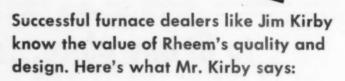


Typical outdated furnace was inefficient, bulky, dirty. It began as a hand-fired coal furnace, was converted to stoker and then oil but still failed to provide good service.



AFTER

New Rheem "Fire-Tested" gas unit was installed and put into operation with a minimum of inconvenience to the home owner—is already paying for itself in fuel savings and heating efficiency.



"When we install a new furnace we tell the home owner we stand ready to provide any necessary service 24 hours a day for one full year from date of installation.

"By using Rheem Furnaces exclusively, we make more profit per sale because Rheem Furnaces require very little service. And, of course, better furnace performance means greater customer satisfaction, too.

"In this highly competitive business, we find that Rheem gives us a definite advantage in the replacement market."

You, too, can get the advantages of Rheem's "Fire-Tested" Furnace line. There's a model to fit every requirement for new and replacement installations. Write the Rheem regional office nearest you for complete details on how you can become a Rheem dealer.



Every Rheem Furnace is Fire Tested

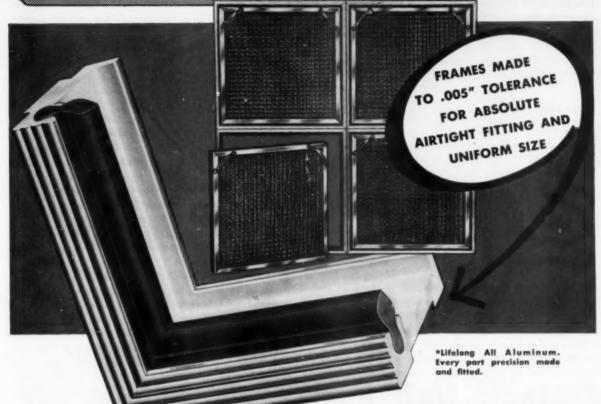
RHEEM

Manufacturing Company

Sparrows Point, Maryland Houston, Texas Richmond, California Chicago, Illinois South Gate, California Seattle, Washington



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EXTRA RIGIDITY HOLDS TRUE DIMENSION AND ALIGNMENT UNDER HEAVIEST STRESS

Made of high strength aluminum alloy. Extruded for superior strength, and highest dimensional accuracy. Filter and frame unit is light. Can be carried anywhere. Easily handled. Weight (including filter, frame, handles, gasket) 16 lbs. 4 oz.

MOLDED NEOPRENE GASKET STOPS AIR AND DUST BY-PASS

Precision manufactured interlocking construction prevents air leakage. Provides proper cushioning for positive sealing. Allows easy removal of filter without releasing dust to air stream.

AS SIMPLE TO PUT TOGETHER AS AN ERECTOR SET

No complicated parts. No complicated instructions. Cuts assembly time to one-half that of conventional type frames.

EVANS MERCHANDISING POLICY GUARANTEES TERRITORY PROTECTION

Adds profits, sales, gives new greater customer satisfac-

Investigate <u>Now!</u> MAIL THIS COUPON TODAY!

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FILTER BU		HOW TO MAKE	MORE MONEY OUT OF TH
		Compe	any
Name			

Installing Procedures For Metal Roof Deck

(Continued from page 108)

members, and prompting a constantly increasing selection for job use by architects and designing engineers for practically all types of building construction. Additional economies are obtained from the simple and easy installation procedure and because operations can be maintained in any weather in which men are accustomed to work.

"Originally, anchoring of deck plates was accomplished by the use of clips, but the great strides in development of welding flexibility have outmoded the use of clips and today practically all roof decking is welded.

Estimating Suggestions

"Estimating costs and the installation of metal roof deck is not complicated. Manufacturers have prepared literature with load performance tables which enable you to determine the proper rib size and gage required to give compliance with specifications, if a specific gage mention is not made in the specifications. The quantity of decking required can be determined by calculating the area to be covered from job blue prints. Where large quantities of decking materials are required, the deck plates are marked for easy identification and these markings coincide with designations on the layout drawing.

"When sizable openings for monitors or skylights are encountered in making layout drawings, the proper plate lengths and necessary closure plates to work around such openings can be determined and the necessity for field cutting is thereby eliminated. Small openings which are required for ventilators, roof drains, etc., are a field operation and are most generally accomplished by flame cutting.

Installation Procedures

"The starting point for roof deck erection appears on the layout drawing. Most types of deck accomplish a side lap feature through a straight rib formation on one side of the deck plate and a channel rib formation on the opposite side.

"In installation, with the ribs of the deck plate facing downward for contact with structural framing, the straight rib will be to the erector's left and the channel rib to his right.

"Attachment to the supporting members is started by welding the straight rib to each purlin. Next, weld the intermediate ribs to purlins by welding through the bottom of the rib. The channel rib is welded alongside of the rib to the purlin.

"The second plate is laid longitudinally to extend the run by nesting the end with the offset ribs into the open ribs of the first plate. (One end of most deck plates is offset or crimped to permit ready end lapping.) Tack the second plate to the first plate at the point of overlapping with a ¾ in. weld in the center of each 6 in. panel. Laps should always be made directly over purlins and should be not less than 2 in. in length. Repeat welding operations described for the first plate to attach each lapping plate at the intermediate and furthermost joists or structurals.

"Start a second row of plates next to the original starting point by placing the straight rib of the plate in the open channel side of the previously installed plate. Weld the nesting straight rib to the base of the channel rib, or insert a 5/16 in. rod slug about 1½ in. long and build a weld over the rod to obtain an attachment at the side nest point. If the span exceeds 5 ft, similar slug welds should be made at a center point between bearing points. Remaining plates of the second row are then welded as described for the original starting row.

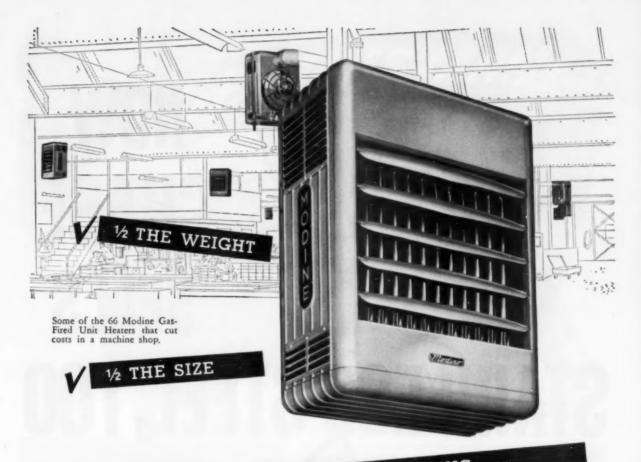
"Instead of following the telescopic pattern of laying plates, the deck may be laid in tiers paralleling the longitudinal direction of supporting framing and the previously outlined welding recommendations will apply."

Cites Advantages of Warm Air Systems

ONE OF THE featured speakers at the recent meeting of the northern Ohio chapter of the American Society of Heating and Ventilating Engineers was George Gould, advertising manager, Viking Air Conditioning Div., National Radiator Co. Mr. Gould discussed the development of perimeter heating from the early twin loop type systems used in small homes on concrete slabs through

many variations that have since developed for use in residences. He also pointed out that perimeter heating was now being adapted to institutional, commercial and industrial buildings with considerable success. One such job he discussed was an installation in a four suite medical building — a single floor structure — and another was the system installed in a church building with two levels.

He stressed the fact that — while in both cases a warm air heating system was less costly than a steam heat system — the builders decided on warm air heating not because of the cost factor, but because of the advantages offered by this type of system. Another strong selling point for warm air heating, he concluded, is the adaptability of the system to year 'round air conditioning.



FASTER, BETTER BALANCED HEATING

Yet Modine Gas-Fired Unit Heaters COST YOU LESS in the long run!

Modine gas-fired unit heaters weigh from 31 lbs. (25,000 Btu) to 210 lbs. (220,000 Btu) . . . approximately half the average weight of other leading makes. This means . . .

Lower Labor Costs — Modines are easier, quicker to install . . . need no hoists or lifting aids. One contractor saved \$600 by installing 66 Modine gas-fired unit heaters instead of competitive units . . . savings

Modine gas unit heaters are lighter and smaller because of their advanced design . . . stainless steel burners, direct-fired tubes . . . no heavy combustion chamber. These same features greatly improve performance and lengthen unit heater life. Get the whole story from the Modine representative listed in your classified telephone book or mail the handy coupon at right.

Modine HEATERS

he passed along to the owner.

Lower Material Costs — Modines require no special supports or ceiling reinforcements . . . another saving in installation cost.

Lower Shipping Costs — Gas units are shipped F.O.B. factory. Modines' light weight cuts shipping costs to a minimum. You pay no freight on excess weight.



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Please send me immediately a free copy of Bulletin 654, "Modine Gas-Fired Unit Heaters."

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Now you can get the same top-notch Chase Service on Stainless Steel that you've been used to on other Chase products. Of course, regular delivery and cutting facilities are available on Stainless Steel orders, too.

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All 24 Chase warehouses plus the Chase sales offices and Chase mills are ready to help you get prompt delivery. If your Stainless Steel order can't be filled from local stock, you'll get prompt shipment from another of the Chase warehouses or from the mill.

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WATERBURY 20, CONNECTICUT + SUBSIDIARY OF KENNECOTT COPPER CORPORATION

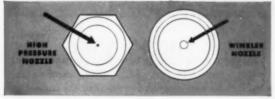
The Nation's Headquarters for Brass & Copper

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THE WINKLER NON-CLOG TURBA NOZZLE Guaranteed 10 years!



The illustrations above show why the Winkler Nozzle makes oversizing of the burner unnecessary. The extremely large opening does not become clogged with dirt or carbon—and changes in oil viscosity do not affect its capacity.

You don't have to oversize a Winkler LP*!

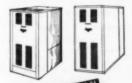
This low pressure burner ends fuel waste because its non-clog Nozzle and built-in Fuel Meter permit exact sizing of the burner to the heat requirements of the building. It is not critical of oil!

Write to the factory for information on the Winkler LP*
Oil Burner and the complete line of Winkler Automatic
Heating Equipment. It's easier to sell than sell against!

FREE SALES AND PRODUCT TRAINING AT WINKLER SCHOOLS

This free profit-course is open to all Winkler Dealers and their salesmen and service men. Trains salesmen to do a hard-intting job of selling Winkler Automatic Heating Equipment—acclaimed amazingly successful in stepping-up sales and profits.





Oil, Coal, Gas-fired Boilers and Furnaces...Gas Conversion Burners...Wall Heaters...Stokers...Air Conditioners...Water Heaters

WINKLER

WRITE TODAY FOR DIRECT FACTORY FRANCHISE DETAILS







TERNE SHEETS are installed with rosin sized paper beneath



ENDS OF SHEETS are joined and then malleted tightly together

Roofing with Longer Terne Sheets

. . . saves time, reduces number of cross seams — resulting in neater appearance, less chance of leaks, according to supervisor on a recent 6000 sq ft roofing job

By A. L. Veverka Follansbee Steel Corp.

For roofs which have slow drainage or a very low pitch, the sheet metal roofer has frequently used terne metal, or what has been commonly (and improperly) referred to as tin roofing. Since it has malleted seams and is tightly soldered, this type of roof has given weatherproof satisfaction for many decades. In fact, some terne metal roofs installed more than 50 years ago have been described by contractors as being "as good today as the day they were applied."

Because some time ago terne plate was being made only in one size — 20×28 in. sheets — the practice has grown of using terne in that size. Usually, the corners of the sheets are notched and the edges bent over $\frac{1}{2}$ in. to form the seams. The custom has been to lay these sheets in such a way that the cross seams are staggered.

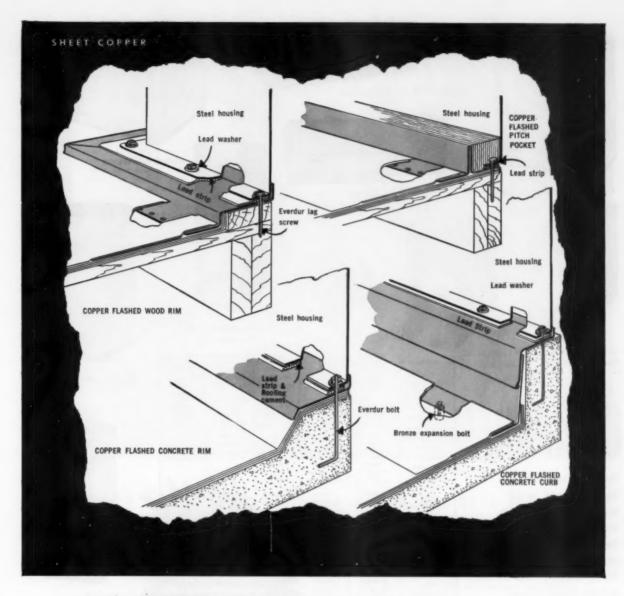
Today, however, the sheet metal roofer has the advantage of using terne metal in any length up to 50 ft, obtained from 50 ft rolls of terne without seams.

Some sheet metal roofers have held the opinion that the extra seams were valuable. They assumed that using 28 in. sheets provided room for expansion and contraction. Today, many contractors feel this has proved to be a myth. Since an expansion joint must provide for free movement, it readily will be recognized that soldered seams do not provide this function. Also, since terne metal has such a negligible coefficient of contraction and expansion, it would seem that these "expansion joints" are not necessary.

Install 6000 Sq Ft of "Long Ternes"

To clarify this point, Thomas G. Boyd of Wellsburg, W. Va., supervised an installation of approximately 6000 sq ft of long terne sheets on the roof of the M. & J. warehouse and freight dock at Follansbee, W. Va. All material was laid on rosin sized paper. The

(This article continued on page 120)



ROOF CURBS: flash them with COPPER for lasting protection

Modern flat-roof buildings usually have one or more construction features calling for roof curbs. These are: penthouse for stairs, skylights, ducts, vent pipes for plumbing, flagpole base, stub columns and many more. Properly flashed curbs keep

standing or wind-driven water from leaking into the building at these points.

Shown here are several curb flashing details for both fireproof and wood construction. Flashing for a piece of equipment with a metal

housing, such as a roof fan or dust collector, is also shown. Lead strips and washers isolate one active metal from the other. In general, use 16 oz. copper of cornice temper for all curb flashing.



Do you have the FREE Anaconda file of drawings? Each drawing shows a new or improved way to apply sheet copper. Each is printed on a separate 8% x 11 page, handy for quick-reference filing. This series may be obtained absolutely FREE by writing for Portfolio S to The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass, Ltd., New Toronto, Ont.

For sheet and roll copper an

ANACONDA'

Distributor will serve you best



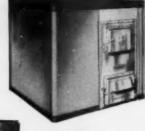
Gasaver DeLuxe Lo-Boy



Assembled Oil Horizontal



Assembled Gas Horizontal



Coal Flo-Warm



Assembled Gas Lo-Boy



Assembled Oil Lo-Boy



9 Models 45,338 to

163,375 B.T.U.

COAL FLO-WARM

AIR CONDITIONING UNITS

Assembled Oil Counter-Flo



Gas Flo-Warm Gravity

Here's the most complete line of furnaces, fittings and air conditioning units ever offered. Before you place your next orders, compare

the WILLIAMSON line with the brand you are now carrying. You'll find the comparison well worth your time-profit-wise.

-	GRAVITY	LO-BOY	HI-BOY	COUNTER-FLOW	HORIZONTA
OIL	3 Models Available Later	3 Medels 100,000 to 145,000 B.T.E.	3 Models 100,000 to 145,000 R.T.U.	3 Models 180,000 to 145,000 B.T.U.	1 Medel 105,000 B.T.U. 1 medel available later
GAS ASSEMBLED	3 Models Available Later	4 Medels 70,000 to 140,000 B.T.U.	4 Models 70,000 to 140,000 B.T.U.	5 Models 70,000 to 140,000 B.T.U.	4 Models 69,000 to 120,000 B.T.U.
OIL FLO-WARM	2 Models 185,880 to 133,000 B.T.U.	8 Models 105,000 to 250,000 B.T.U.	4 Models 105,800 to 189,000 B.T.U.	2 Models 105,000 to 140,000 B.T.U.	
OILSAVER FLO-WARM	2 Models 105,000 to 133,000 B.T.U.	7 Models 105,000 to 250,000, B.T.U.	3 Models 105,000 to 189,000 B.T.U.	11.4	44
GAS FLO-WARM	3 Models 85,000 to 140,000 B.T.U.	7 Models 85,000 to 250,000 B.T.U.	1 Model 85,000 B.T.U.	N. C.	
GASAVER DELUXE FLO-WARM	3 Models 85,000 to 140,000 B.T.U.	7 Models 85,000 to 250,000 B.T.U.	-5	08 Differen	Types
DUO-FUEL FLO-WARM	3 Models 85,000 to 140,000 B.T.U.	4 Models 100,000 to 190,000 B.T.U.	—P	Different (ipe & Fittir NY Systen	gs for

6 Models 102,000 to

275,000 B.T.U.

2 and 3 Ton Water-Coa

in 4 styles. 2 and 3 Ten Air-Coo

Complete Line of Air Conditioning Units



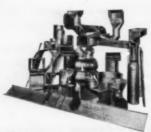
Oil Flo-Warm Hi-Boy

ILLIAMSON

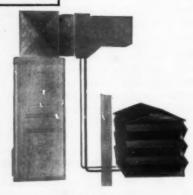
THE WILLIAMSON HEATER CO. 3551 MADISON ROAD, CINCINNATI 9, OHIO

Gentlemen:

Yes, rush ma details on the complete WILLIAMSON Line.



Duct, Pipe and Fittings



Air Conditioning Units (Air Cooled Unit Shown)



Enduro's Bonus Benefits Mean Bonus Business for You

Equipment buyers in your area may have dozens of different reasons for specifying certain materials. One may require ease of cleaning. Another, handsome appearance; or, resistance to weather. Still another, extreme wearability. No problem. By fabricating and furnishing equipment made of Republic ENDURO Stainless Steel, you can satisfy them all.

That's what we mean by ENDURO's "bonus benefits." In ENDURO equipment a buyer gets the exact advantages he wants. And, he gets all of ENDURO's other advantages as a "bonus." Because, no other commercial metal offers all the advantages of stainless steel.

ENDURO is easy to clean and to keep clean. It resists rust and corrosion. It resists abrasion and denting.

It resists heat, and the action of most acids and alkalies. It does not concaminate metallically. It has no applied surface to chip, peel or wear away. It keeps its bright handsome appearance through the years. It is easy to fabricate on your present equipment.

Sell the "use." Show how the ENDURO equipment you fabricate meets the needs and supplies "extras," too. Republic will help you get going as an ENDURO specialist so that your shop can cash in on bonus business. Write:

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
EXPORT Department: Chrysler Building, New York 17, N.Y.

REPUBLIC REPUBLIC STEEL ENDURO STAINLESS STEEL

Other Republic Products include Black, Galvanized, Galvannealed and Electro Paintlok Sheets — Toncan Iron Sheets — Bolts and Nuts — Tubing

Fastening, Sealing for Long Roofing Sheets

(Continued from page 116)



CLEATS ARE STAPLED at regular intervals



SEAMS ARE SOLDERED with a rosin-linseed oil flux

material used was 40 lb coated terne metal, IC gage, painted on one side and cut to 10 ft lengths. These 10 ft lengths were obtained from 50 ft seamless rolls. The corners were notched by hand. The long edges were formed beyond 90 deg as far as possible in a 10 ft brake, with a $\frac{3}{4}$ in. bend. The ends of the sheets were formed on the job as applied. This method permitted the material to nest perfectly on skids for hauling.

The drip edge was bent at a 90 deg angle with a shop brake and was nailed around the perimeter of the building. Starting sheets were cut 5 ft long and notched and formed in the same manner as the 10 ft long sheets.

A 20 in. wide strip was applied to the entire length of the bottom edge of the building. One edge was turned up $\frac{3}{4}$ in. by hand. The other side of this strip was formed $\frac{11}{2}$ in. long and bent down under the drip edge. Cleats $\frac{11}{2}$ in. wide were stapled 12 in. apart along the edge. Staples were of 14 gage wire.

One row of full length sheets was applied. The ends

of the sheets were formed during application by use of an improvised tool made from 24 gage metal. The second row was applied, starting with a 5 ft sheet, which staggered the cross seams.

Particular care was exercised to keep sheets in a straight line. This meant cleating both corners of each sheet before cleating the center and not pulling the corners too tight. Seams were malleted tightly and soldered immediately with a rosin and linseed oil flux. Excess flux was removed after soldering. Finally, the entire area was covered with two coats of iron oxide paint, Government Specification T.T.P.3la.

The estimated saving in application time, as compared with time required for installing 20 × 28 in. sheets, was greater than 30 per cent, according to Mr. Boyd. Fewer soldered cross seams also resulted in considerable savings in both labor and material.

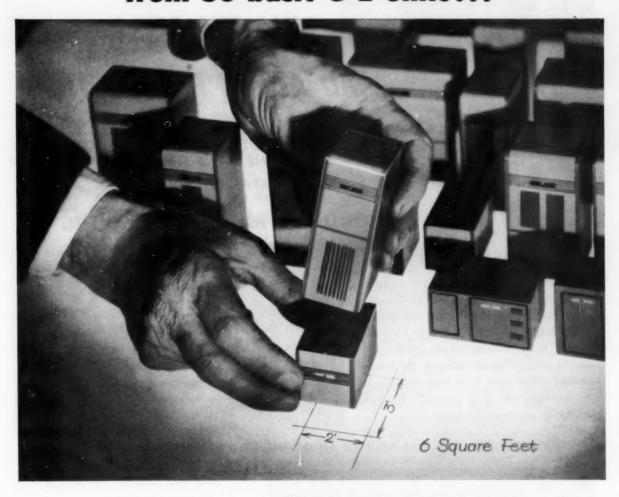
The reduction in the number of cross seams resulted in a neat appearance, quick application of paint and a trouble-free, weatherproof roof.

Reports on European Studies in Heating, Cooling

G. V. PARMELEE, research associate, American Society of Heating and Ventilating Engineers, recently reported on European research activities in comfort conditioning. He gave particular emphasis to results of physiological studies as related to heating and air conditioning, panel heating, and heat flow in buildings and building materials.

Mr. Parmelee visited a number of schools and research laboratories, including Delft University in the Netherlands, where performance of long panel-type radiators was being studied; a school in England which was conducting studies on comparative performance of floor panel, warm air, and radiator heating; and the British Medical Council's laboratory in London where an environment chamber with a fixed ceiling has just been completed. This is a 9×10 ft enclosure formed by 1 ft wide flat hollow metal ducts through which air is circulated. Individually controlled heating and cooling units provide considerable variation in surface temperature conditions.

Now-4,784 heating-cooling combinations from 50 basic G-E units...



...exclusive feature of "The Franchise with a Future"

UPFLOW, DOWNFLOW, HORIZONTAL UNITS—G. E. HAS THEM ALL. Assembling this new G-E Downflow Year-Round Air Conditioner is almost as easy as it looks in the picture. G. E.'s *Upflow* Furnaces and Cooling Units, and *Horizontal* Furnaces and Cooling Units, pair up the same way. Heats with gas or oil, cools by electric refrigeration (water- and air-cooled models). And with G-E Air-Wall System, whose registers handle heating and cooling equally well, the G-E dealer can tailor comfort to fit any home—sell modern living at its best.

New dealers are needed in this rapidly expanding field. Would you like to know more about your opportunities as a G. E.-franchised dealer? Then mail the coupon today!



HOME HEATING and COOLING

Reg. trademark General Electric Co.

G. E.'s 6-POINT PROFIT PLAN:

G. E. enjoys best consumer acceptance in the field.

2. Most flexible (and most copied) heating and cooling line on the market.

3. G-E units are easier to handle and install. Units are factorywired, assembled and fire-tested ...pass through normal deorways without dismantling. Factory training for your men, at G. E.'s application and service field schools.

5. G. E.'s consistent national advertising to homeowners and builders pre-sells your prospects.
6. G. E. supports you with local newspaper advertising, literature, displays, sales plans — to sell homeowners and builders.

GENERAL 🝪 ELECTRIC

General Electric Company, Home Heating and Cooling
Dept., Sec. AA-11, Air Conditioning Div., Bloomfield, N. J.
Yes, I'm interested in your "Franchise with a Future." Tell me
more. My principal business is
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COMPANY

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The No. 1000 U. S. BASE DIFFUSERS RING THE BELL! LEAD ALL IN POPULARITY

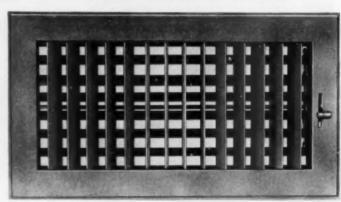


ASK ANY USER, THEY'LL TELL YOU, "SAVES ONE DAY'S TIME FOR TWO MEN ON EVERY INSTALLATION".

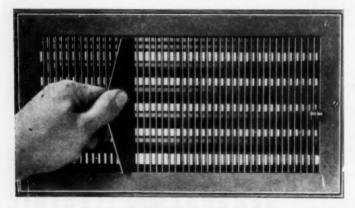
YOU CAN'T AFFORD TO MISS THIS SAVING

The No. 190 U. S. MULTI-FLEX

A NEW COMPLEXION - A New Finish - ART BUFF That Blends with all surroundings or may be covered with one coat of paint on the average. - LOOK OUT - for a new opposed Valve movement 1955, which movement is even an improvement of the Present opposed Valve which is an Expired Patent of our invention and since expiration has been imitated by our competition.



Specify Now No. 190 Series with Opposed Valves for early 1955 Delivery



That RELIABLE, EFFICIENT No. 256 U. S. A-C REGISTER

GOING OVER BIGGER - BETTER for Residential and Commercial Heating, Cooling, Air Conditioning Systems. Four-Way Flow, Multi-Valve, Non-Vision and Greatest in Labor Saving of all A-C Multi-Valve Registers. Do not be talked into using inferior Lines. It would not pay off.



OUR NO. 55 CATALOG - READY ABOUT DECEMBER WILL BE AN INNOVA-TION TO ALL REGISTER AND GRILLE BUYERS, BE SURE TO GET IT!

RECHISTIBLE

MICHIGAN

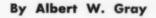
SOLD LEADING COAST COAST

YOU AND THE LAW

How Complete Must

Customer Instructions Be?

. . . when operating instructions are given, the dealer is responsible for pointing out all dangers that may be connected with the functioning of the equipment





INSTRUCTIONS SHOULD cover the precautions that are to be exercised when operating any of the safety devices

A DEALER in warm air heating equipment furnished his customers with four pages of directions headed, Operating instructions. The first page, devoted to general explanations was followed by instructions for installation of the furnace and the electric hookup. Under the head Initial start up were listed 16 items with the admonition, "Make sure the gas line is completely purged of air," and on the third page, extending to the following page was set forth a trouble chart.

On one occasion a piece of this equipment was purchased and a book of instructions given the owner. During the first year the furnace failed to operate during a cold spell. The motorized gas valve would open temporarily and then go into a safety shutdown. The instructions did not indicate the open or closed positions of the main valve or the pilot cock and in an effort to solve his difficulties the customer attempted to follow the direction, Make sure the gas line is completely purged of air.

On the side of the burner was a 3% in. plug removable with a wrench or pliers but the directions gave no information that removing it nullified the safety devices and gas would be released into the combustion chamber. Seeking to purge the gas line of air, the customer unscrewed the plug; a few minutes later, he replaced it

and pressed the manual reset button. The free gas thus accumulated in the combustion chamber was ignited and an explosion killed the customer.

In its decision of the lawsuit brought because of this man's death the court called attention to the absence in the instructions of any warning of the dangers from a removal of this plug. The buyer, the court said, could reasonably believe that because of its conspicuous position the plug was for the purging of air from the gas line.

Partial Instructions Not Enough

This decision against the dealer concluded with the comment by the court that where a dealer undertakes by instructions to advise the proper method for the use of equipment he assumes the responsibility of giving accurate and adequate information in that respect and his failure to do so may impose upon him a liability in damages for negligence.

Reference was made in this decision to a case of the same character that occurred several years before. In that instance, after the installation had been completed, the dealer had said to the purchaser, "I want to show you about the thermostat. In case at any time you go to light your furnace, turn the indicator on the thermostat to the left. This will shut off the gas from your furnace."

No further instructions were given nor anything said

Albert W. Gray, author of this article, has had over 20 years' experience as an attorney in the courts of New York City. He has written widely on legal matters and is the author of The Family Legal Adviser.

of the functions of the master valve. Several months later the owner lighted a match to discover the cause of the failure of the furnace to respond to the thermostat and was seriously injured by the explosion that followed.

In the action brought for the injuries received, the dealer's defense was that he was not liable for giving inadequate instructions as he was under no obligation to give any in the first instance.

"Assuming that to be true," said the court, "the dealer did give some instructions and having done so it was his duty to go further and give instructions at least complete enough to cover the various phases of operation. The instruction in reference to shutting off gas by operating the thermostat without calling attention to the master valve was likely to and did contribute to the explosion."

When No Payment is Involved

In the early years of the last century a case came before the courts of one of the eastern states in which the coowner of a seagoing vessel had promised the other owner that he would secure insurance on the ship. Later, when the vessel was wrecked off the coast of North Carolina, it was discovered that the promise to effect this insurance had not been fulfilled.

Suit was brought for this neglect and in denying a recovery the court laid down the law that today still governs the liability of a dealer volunteering to furnish instructions and failing to furnish those that are adequate or sufficient.

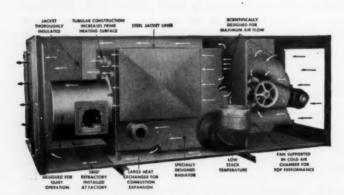
"The chief objection raised to the right of recovery in this case," said the court, "is a want of consideration for the promise. The offer on the part of this co-owner to cause insurance to be effected was perfectly voluntary. Will, then, an action lie when one party entrusts the performance of a business to another who undertakes to do it gratuitously and wholly omits to do it? If the party who makes this engagement enters upon the execution of the business and does it amiss through a want of due care by which damage ensues to the other party an action will lie for this wrong doing. But this co-owner never entered upon the execution of this undertaking and the action is brought for the failure to act.

"By the law one who undertakes to do an act for another without pay is not answerable for omitting to do the act and is only responsible when he attempts to do it and does it amiss. In other words, he is responsible for wrong doing but not for a failure to perform."

In relation to the business transactions and the duties of a dealer in warm air heating or air conditioning equipment, so long as the dealer does not undertake the performance of a promise for which he has received no compensation, such as the giving of instructions or directions, there is no liability on his part because there is no contract. On the other hand, when he does undertake the performance of such a promise and is negligent in so

Tuondavie

... OUTSTANDING DESIGN FAMOUS FOR RAPID, AUTOMATIC HEATING!



EASY-TO-SELL TROUBLE-FREE, OIL OR GAS FIRED HEAT

Cash in on the tremendous demand for horizontal-type furnaces write for attractive dealer or jobber sales plans. Increased production brings better delivery—and you can meet or beat all competition for practical, well-made, efficient furnaces. Designed for garages, stores, service stations, warehouses, factories and dwellings.

COX MANUFACTURING COMPANY

RIDGEVILLE, INDIANA
EXCLUSIVE MANUFACTURERS OF WONDAIRE DESIGNED FURNACES

WORLD'S FINEST OIL OR GAS FURNACES

There is a WONDAIRE furnace for every heating need. If you are an aiert, up-to-date jobber here is your opportunity to tie up with one of the finest manufacturers in the business, Sizes from the smallest to the largest are available including: 80,000; 95,000; 115,000; 150,000; 225,000; 300,000 and 400,000 BTU. Shipped completely assembled—all parts standard and nationally known.



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WHISPER-QUIET OP-**ERATION.** Smoothrunning compressor is hermetically sealed and shock-mounted. Vibration-free blower is permanently lubricated and dynamically balanced. Ceramic-coated heat exchanger muffles burner noise.



ONE-POINT THERMOSTATIC CONTROL. Homeowners can change from summer cooling to winter heating by flicking a switch and setting temperature wanted. No fiddling with dampers.

It's here! The smallest year-round home air conditioner on the market!

That's right! The brand-new, 1954 Worthington year-round air conditioner takes up less space than any other unit of the same capacity. It measures only 29" deep x 42" wide x 70" high, goes through a 30" door.

It's a completely modern forcedair heating and cooling unit; so good looking it can be installed in a playroom; so compact it can fit into a closet. We designed this unit for easy installation in any type of home.

Home-owners have their choice of

gas- or oil-fired heating. Either way, they get economical, balanced heat. And the hermetically sealed cooling unit has a five-year warranty.

Take a long look at some of its "years ahead" features shown in the photos. Then see your nearest Worthington distributor for more facts and figures. Ask for our new folder, "What Every Builder Should Know", C-1100-B54, or write Worthington Corporation, Air Conditioning and Refrigeration Division, Harrison, N.J.

WORTHINGTON



Climate Engineers to Industry, Business and the Home



doing, he is responsible since he has done it amiss.

Instructions Must Be Complete

An appliance dealer sold an electric washing machine and volunteered to instruct the purchaser in its use. In explaining its operation he failed to call attention to a set of exposed gears that had been left without a guard. Later when the customer was using the machine, her sleeve caught in these gears, severely injuring her arm.

"The dealer," said the court in the action by the customer for these injuries, "was under no legal obligation to give these instructions but volunteered to do so. In this case the dealer undertook the responsibility of giving the instructions as to the proper use of the machine and how to avoid dangers incident to its use. And when the dealer undertook to inform the purchaser as to the mode of using the machine he assumed the responsibility of giving such information as was reasonably necessary for the purpose."

In the installation of equipment in a western refrigerating plant an employee of the purchaser was directed to acquaint himself with the knowledge necessary for his operation of the system. After this installation was completed the supervising engineer for the contractor voluntarily remained for 10 days to instruct the plant employee in the operation of the system. The engineer, however, omitted warning the employee in the use of a valve for draining a trap of oil saturated with anhydrous ammonia.

After the employee was in sole charge he opened this valve and from lack of adequate instructions neglected the precautions he otherwise would have taken. He opened the valve wide and oil mixed with this refrigerant, forced by the pressure within the trap, splashed over the pail and onto his face and body, causing freezing of the skin tissues with resulting scars.

In sustaining the right of the employee to a recovery of damages from the contractor for his failure to furnish full and complete instructions, the court said,

"Assuming that the contract between the contractor and the purchaser did not require the former to instruct this employee as to the proper operation of the valve, nevertheless it is certain that inasmuch as the contractor's engineer assumed to instruct the employee in this regard he was under obligation to give him full and proper instructions as to the danger which might result under conditions like those herein existing where a plug was formed at the mouth of the valve as the result of a viscous formation of oil containing a foreign sediment."

This law an English court two and a half centuries ago established with the famous statement.

"If a man undertakes to build a house without anything to be had for his pains, an action will not lie for non-performance because it is without consideration. But if a man takes upon him expressly to do such an act safely and securely, if the thing comes to any damage by his neglect, an action will lie against him."

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]



new homes the COZY line means a bigger market because

FITS ALL HOMES

remodeled homes

COZY MODELS 200-140 UP-FLOW AND 201-140 COUNTERFLOW are for installation in the new rambling ranch-type homes, or the remodeled two-story homes. Cozy Counterflow models blanket the outside walls of a home with warm air and check cold air entry. All Cozy Furnaces can be installed with conventional ducts or with the new 4" piping system.



COZY MODELS 200-105 UP-FLOW AND 201-105 COUNTERFLOW heat the larger-than-average-sized new or remodeled home, yet they take very little space, because all Cozy Furnaces fit zero clearance into closets, alcoves, utility rooms, on porches, or in basements, and allow more liveable space in a home. All parts are serviceable and accessible from the front.



COZY MODELS 200-75 UP-FLOW AND 201-75 COUN-TERFLOW are especially designed for use in new or remodeled average-sized homes with or without a basement, or for use with the new type concrete slab floors. All Cozy Furnaces are shipped ready to install, completely wired, assembled, and inspected. Just connect to 110-volt circuit, connect ducts, and Cozy is ready to go.



COZY WALL HEATERS open the door to volume sales to motels, hotels, offices, stores, and apartment houses. Cozy Wall Heaters give that individual service so necessary to please guests and tenants. Each occupant controls own temperature. No lost floor space. Efficient burner, large heat exchanger surface, ample volume air capacity.



Tested and approved by American Gas Association Laboratories under American Standards for alcave and closet installations when installed according to manufacturer's printed instructions.







Learn how you can profit from our sales-producing and high-profit "contracting" plan.

Ask Your Distributor . . . or Write Direct Today

The ADVANCE FURNACE CO.

"A Profit a Day"

who's been in the business for 33 years. Quality work, careful accounting and bidding procedures and smart selling insure a profit margin

SPEAKING FROM 33 years' experience as a sheet metal contractor and a warm air heating dealer, Jack Stowell of Aurora pressed home what he considers to be the most essential objective of a successful business operation. (His speech was given at the 40th annual convention of the Sheet Metal Contractors Association of Illinois shortly before he died.) Mr. Stowell said, "You've got to take into the business more money than you pay out." Every suggestion he made following this initial statement dealt with the importance of calculating each day's business on the basis of whether the work done that day produced a satisfactory profit.

In reviewing the operation of a business, Mr. Stowell

said, "The most important man on the payroll is the bookkeeper. Get a good one and pay him what he is worth, and he will give you records that will tell you if you have made or lost money on each day's operation. Incomplete records aren't only hard to read, they are expensive, too." Mr. Stowell suggested that an accurate control over inventory is a most essential step to successful business operation. "Clean out the old stock — use it up — and buy what you know you are going to need before you need it, but not as a safety feature," he stated.

A good business indicator suggested by Mr. Stowell is the accounts receivable ledger. The total amount



There's money in the air...
when you sell CHRYSLER AIRTEMP!









Chrysler Airtemp Hi-Boy Space Saver (above) and Lo-Boy Space Saver (below) with inverted "V" cooling coil.

does the name help you sell?

THIS ONE WILL!

You will find that your prospects—even those who have never purchased heating equipment from you before—recognize and respect the famous Chrysler Airtemp name. It's the name they associate with engineering leadership and products of the highest quality. It's the name that makes your job of selling heating equipment easier—and much more profitable!

There are many other important advantages for you in the heating franchise that really means business! Your inquiry is invited now. Write to Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.

AIRTEMP DIVISION OF CHRYSLER Air Conditioning's Chrysler Airtemp

HEATING . AIR CONDITIONING FOR HOMES, BUSINESS AND INDUSTRY



Get in on the rapidly-growing "change-over" market with A-LUM-O-AIRE — America's fastest-selling permanent filter! More profit on per-unit sales plus an established demand on a real volume-builder. A ready prospect in every warm-air or air-conditioning furnace owner. Why not investigate, today!

features that help you sell

Clean, safe and economical. No messy oils or adhesives; no added fire hazard. Flushes clean with water, yet absolutely rustproof. "Lifetime" construction. Exclusive filter media catches and holds more dirt; permits better heating efficiency.

assured customer satisfaction

A-LUM-O-AIRE performance helps you maintain "good-will" of your old customers; helps you win new friends. A better product is always talked about — and it all adds up to extra sales, greater volume and bigger profits for you.

effective merchandising

Adequate sales aids and other essential materials for your local advertising and promotional requirements — plus an attractive pricing structure that lets you realize a good margin while you are meeting and beating competition.



· fast, easy servicing

Washes clean in a jiffy with cold water. Nothing to add; no mess to clean up after the job is finished. Saves valuable time; eliminates the cost of extra materials.

CAREY ELECTRONIC ENG. CO.

world's largest manufacturers of aluminum and copper wool

The Sales Inc.								
Metal Wool Division Carey Electronic Engineering Co. 1877 Clifton Avenue Springfield, Ohio	dealer distributor							
Name	Title							
Company								
CityZ	oneState							
Attention Distributors: Exclusive territ								

owed the company should never exceed one month's gross sales volume. "If this condition exists," he said, "take the necessary steps to remind your customers that their bills are due."

"Specialization, Quality Go Hand in Hand"

"You can't get all of the business in your locality and you couldn't handle it all if you got it," Mr. Stowell said, recommending that the dealer concentrate on the kind of work he wants to specialize in and go after that kind to build his reputation as a specialist. "Build your reputation to fit the prestige you want your business to enjoy," he said.

"The reputation of a company — in the long run — is based upon the poorest quality of work performed by it," Mr. Stowell continued. "Every person has a different opinion as to what quality represents — thus a company's reputation follows its own definition of quality. An alert dealer will not accept a standing definition of this term but will endeavor to exceed his own standards and thus raise the level of the product he produces." Reputation and quality go hand in hand with specialization, he said.

"Sometimes a dealer or contractor will be too anxious to get the bid on a certain job — for temporary profit or otherwise — and in making his estimate he will shave the overhead and job costs to the bone. Then when something unexpected occurs to delay the completion of the job, the dealer realizes that he not only will fail to make any profit but that he will have to furnish some of his money to complete the job," Mr. Stowell said. This kind of a situation results in cutting corners and, usually, an unsatisfactory finished job, he feels. Here, both parties are unhappy with the end result, but this is not the complete picture — the firm's reputation is the final casualty because its reputation is only as strong as "the weakest link."

Stress "Buying Points"

Mr. Stowell rounded out his advice by reminding the dealers and contractors that there are "buying points" as well as selling points, and that the wise salesman will orient his selling to the buyer's point of view. He defined two types of buying points — positive and negative. The first comprises any equipment feature that the prospect likes; the second, a feature or features which the buyer would consider detrimental. The salesman, he said, should expand on how his equipment incorporates the positive features and on the foresight of the manufacturer whose engineering skill has eliminated any possibility of the negative features.

"However," Mr. Stowell said, "no salesman can sell anything until he has sold himself to his customer. The most essential prerequisite of any salesman is *sincerity*. Get your customer to believe in you first, then associate yourself with your product. If they accept one, they will accept the other."

WHAT ASSOCIATIONS ARE DOING -

(Continued from page 50)

The Construction Crafts Contractors' Council of Peoria. Purposes of the organization are: 1) to unite the various construction crafts contractors' associations into a council; 2) to promote business ethics and codes to improve quality of service to the public; 3) to further harmonious relations among the members of the council; 4) to collect and disseminate information affecting market and economic conditions; and 5) to aid in promoting and strengthening construction crafts contractors' associations. Lee Wagener, furnace and sheet metal contractor of Peoria, has been named secretary-treasurer of the newly formed organization.

Ohio Contractors Plan Convention

THE OHIO SHEET METAL Contractors' Association plans to hold its annual convention February 28 to March 2 at the Sheraton-Gibson Hotel, Cincinnati. Chairmen appointed to head the various committees participating in the program plans include: publicity, R. Blum; speakers, J. Jacobson; entertainment, L. Gillespie; program, W. Kroening; registration, A. Kramer; reception, C. Hoffman; and prizes, J. Hardebeck. The hotel committee consists of J. Jacobson and L. Gillespie. First meeting of the convention committees was held in October on the night of the Cincinnati Sheet Metal Contractors Association regular meeting.

Distributors Meet In Atlantic City

THE 44TH ANNUAL MEETING of the National Association of Sheet Metal Distributors was held in Atlantic City at the Marlborough-Blenheim Hotel. The following officers were elected to serve for the ensuing year: president, Lee J. Haines; vice presidents, Roger K. Becker and Louis F. Demmler. Members of the executive committee elected for terms expiring in 1957 are Conner Clapp and J. J. Worley, Jr.

(A complete report of the convention proceedings will be published in the December issue of American Artisan.)

Dayton Pushes Publicity Program

THE DAYTON HEATING and Air Conditioning Association is sponsoring a series of quarter page advertisements in local newspapers. One such ad outlines briefly what the home buyer or owner should know about heating comfort. Another cautions home owners to beware of the heating man who comes in and after only a cursory inspection of the premises comes up with a cost estimate on a heating plant. Regularly stressed is the fact that home owners can be assured of getting efficient, economical systems if they purchase them from qualified members of the Dayton association, whose names and addresses are listed in each ad.



Right around the corner from your shop there's a big profitable market waiting for you! One out of every five of the heating systems in your area is a gravity furnace that needs modernizing—needs an efficient and economical REX AIR-PAK BLOWER-FILTER.

The REX AIR-PAK BLOWER-FILTER—by forcing clean, filtered air into hard-to-heat rooms in winter and providing cooling ventilation in summer—steps up comfort, saves fuel and money for your customers, makes sales and profits for you.

Packaged for easy installation—powered by the sturdy, trouble-free Rex blower—cushioned on resilient rubber for quiet operation the REX AIK-PAK is designed for many years of satisfactory service. A full range of sizes makes it simple for you to modernize any warm-air gravity heating job.

For complete details—write today to

AIR CONTROLS, INC.

Division of the Cleveland Heater Co.

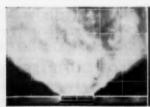
2310 SUPERIOR AVENUE • CLEVELAND, OHIO



Auer Perfusaire

● The new *low-cost* baseboard decorator style perimeter diffuser illustrated above is only 18" long, but with a capacity of 4 to 8 foot units. Designed for easy installation in or against plastered walls, inside or outside the baseboard and in new or old construction. It has a pre-cut hole for 2½ x 12" duct openings and knock-outs to accommodate 2½ x 14" where needed. It is the answer to uneven wall installations—so difficult with long diffusers.

"Perfusaire" distributes air evenly over a wide fanshaped area, and is equipped with a built-in damper for system balancing. It is an ideal unit for combination heating and cooling systems.



Auer"Perfusaire" test photo showing huge fan-shaped air pattern, ideal for heating and combination heating and cooling systems.



Clip fasteners permit a means of attaching $2\frac{1}{4} \times 12^{\prime\prime}$ or $2\frac{1}{4} \times 14^{\prime\prime}$ duct without cutting the diffuser.

FLOOR TYPE

For floor type perimeter and intricate "narrowspace" installations, Auer can fill your needs from its complete "DRP" line of registers in standard sizes.



Awer-

Write for full details on low cost"Perfusaire" and other perimeter diffusers. Ask for Bulletin P-54.

THE AUER REGISTER CO.

6602 Clement Ave. • Cleveland 5, Ohio

equipment developments

(From page 54)

18

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Compact Space Heaters

Models hb160 and hb210 highboy oil fired furnaces — Delta Heating Corp., 1 Cole St., Trenton 8, N. J. The furnaces are rated at 160,000 and 210,000 Btuh output at the bonnet respectively. The filter is located



at the bottom of the furnace for bottom cold air return; a side filter bracket can be supplied for installations requiring a side return. For space heating, a dieformed accessory bonnet is available. The heat exchanger is of tubular design. The combustion chamber is of pre-formed refractory material for front attachment of a flanged gun type oilburner.

Return Air Sterilizer

AIR STERILIZER for installation in return duct of warm air heating system — Air-Heet Corp., 4535 W. Washington Blvd., Chicago, Ill. The unit is designed to kill airborne bacteria and to generate ozone for reducing cooking, tobacco and other household odors. It operates on 110-120 volt a.c. electric supply, measures 17 in. deep, 2 in. wide and 3 in. high. According to the manufacturer, it can effectively handle the requirements of houses containing up to seven rooms.

Attic Fan for Ranch Type Homes

"VT-20" VERTICAL discharge attic fan designed especially for ranch style homes having living space floor areas of 1000 sq ft or less and having ceiling joists on 24 in. centers — McLean Engineering Laboratories, P. O. Box 531, Princeton, N. J. The fan and the 20 × 27 in. ceiling shutters can be installed in these homes without cutting a ceiling joist, according to the manufacturer. All moving parts are soundproofed. Features include rubber mounted main bearing and motor; flexible steel frame; and soft rubber, built-in, vibration

absorbers. Other features are long-hour duty motors with automatic thermal overload protection, balanced pulleys, permanently lubricated ball bearings and a deep drawn steel orifice for maximum air flow.

Packaged Summer Air Conditioner

RESIDENTIAL SUMMER air conditioner designed to cool a five, six or seven room home — Mitchell Mfg. Co., 2525 Clybourne Ave., Chicago. The 3 hp unit includes a hermetically sealed compressor, an expanded evaporator, a water cooled condenser, blower and filters. It measures $22 \times 20 \times 62$ in. Its own blower is included to take care of the extra volume of air needed on some installations for summer operation.





Left: Air Conditioner

Cleanable Air Filter

CLEANABLE AIR FILTER with a synthetic fiber blanket which catches and retains dust by accumulated static charge — Continental Air Filters, Inc., P. O. Box 1647, Louisville 1. The 1 in. air filter has been designed for use in domestic and small commercial installations of air conditioners, warm air furnaces and air handling equipment. The filter is cleaned by rinsing under a cold water faucet or hose. To eliminate the rust problem an aluminum frame is used.

Solder and Flux

SOLDER AND FLUX for light sheet metal work — Wonderod Corp., 4232 Lancaster Ave., Philadelphia 4. An invisible joint is formed when applied with a propane torch, the manufacturer states.

Oil Fired Water Heater

MODEL 433 AUTOMATIC oil fired water heater with a 30 gal storage capacity and 45 gal per hr recovery rate — Perfection Stove Co., 7609 Platt Ave., Cleveland 4. The sealed in "Multi-Heat" burner is backed by a 10 year guarantee and there is also a 10 year tank guarantee. A positive oil control valve feeds the exact amount of fuel needed at all times, the company

- for Greater Strength
- for Longer Wear
- for Lower Cost



One Piece
Stamped Steel
V-BELT
PULLEY
for
Heating and
Air Conditioning
Equipment

Standard Fractional Horse Power V-Belt Pulleys. All sizes in stock. Variable Pitch. Allows Speed Variation up to 30%. OD's from 3¼" to 3½".

ALL PULLEYS BROACHED AND 100% INSPECTED

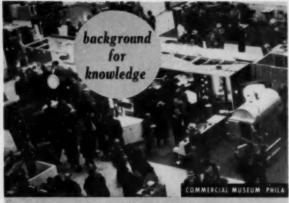
Used by a majority of the largest Automobile and Heating-AirConditioning Manufacturers.

Write for literature and prices



Zatko Metal Products Co.

20850 St. Clair Ave., Cleveland 17, Ohio



Air Conditioning Exposition

12 TH INTERNATIONAL HEATING EXPOSITION

JANUARY 24-28, 1955

Over 400 leading manufacturers of heating, ventilating and air conditioning equipment and supplies will provide an outstanding background for knowledge in this largest of all Heating and Ventilating Expositions!

Up-to-the-minute information on new products, new trends and new practices in warm air heating and air conditioning will be available in this 5-day concentration of industry-wide improvements.

Learn solutions to installation and application problems.

Compare competitive products.

Discuss plans and requirements with technically qualified personnel.

Whatever your interest in warm air heating and air conditioning applications in the home, you will find hundreds of new products that will be helpful to you in developing future business and profits.

PLAN NOW to make this a "must see" event for you and your associates.

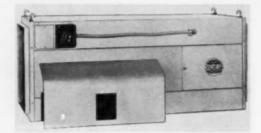
Under the auspices of the American Society of Heating & Ventilating Engineers

Write for advance registration
Management: International Exposition Co.
480 Lexington Ave., New York 17, N. Y.

states. Fiber glass insulation and confined air space are featured to reduce heat loss. The heater is finished in white baked enamel with chrome trim for use in kitchen, utility room, basement or recreation room.

Gas Fired Horizontal Furances

GAS FIRED HORIZONTAL warm air furnaces in capacities of 65,000, 80,000 and 100,000 Btu input — Century Engineering Corp., 401 Third St., Cedar Rapids, Ia. Units are compact, can be installed in crawl spaces, in basements, utility rooms, and in attic spaces. They



are available as left-hand or right-hand units. Horizontal vent, allowing installation in limited space, is standard on all models. Furnaces are completely assembled and factory wired, contain centrifugal blowers, cast iron slotted port burners, automatic controls and suspension bolts for use as hangers. Filter frames and filters are available as optional equipment.



Rectangular Duct and Fittings

"Duc-pac" Rectangular pre-formed duct and duct fittings for small pipe perimeter heating — Swett Bros., 78 Island Pond Rd., Springfield 8, Mass. The duct measures $5 \times 31/4$ in. Duct as well as fittings feature the press-together method of assembly.

Metal Ceiling Tile

"ARRESTONE" ACOUSTICAL metal ceiling for installation below original ceiling — Armstrong Cork Co., 4404 Concord St., Lancaster, Pa. The ceiling tile is of the perforated metal pan type, backed by a mineral wool pad that acts as a sound absorber, and is cut in panels measuring 12 × 24 in. Each panel contains a hollow metal air flow channel — 1½ in. wide × 23¾ in.

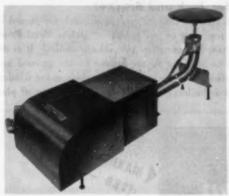
long — inserted on the long side of each metal pan. The channel is used for discharging air into the occupied areas when the space above the acoustical ceiling is used as a plenum chamber.

Window Filter-Fan Unit

WINDOW FILTER designed to remove up to 99.4 percent of the pollen, mold spores, dust and other airborne allergens from room air — Norge Div., Borg-Warner Corp., Merchandise Mart Plaza, Chicago 54. Known as the "Norge-Aire," the filter-fan is one of the few units on the market that can be used as a window or table model.

Gas Conversion Burner

"QUIET-FIRE" GAS conversion burner specifically designed for quiet operation — Armstrong Furnace Co., 851 W. Third Ave., Columbus 8. A specially designed ring of metal called a flame retention sleeve is built



into the single port which forces the flame to hug the opening. Without such a device, the manufacturer states, the flame is lifted above the opening by the force of the gas. The burner uses the latest automatic controls, including a self-energizing control circuit which generates its own current from the heat of the pilot flame. All controls are operated by this current and no connection with the house current is needed. With this type of control system, electric power failures have no effect on the burner's operation, according to the manufacturer. There are five models available, three for natural and mixed gases, one for manufactured gas, and one for LP gas. One of the features of this burner is its flexible firing range (from 50,-000 to 275,000 Btuh) which permits adjustment for each installation.

Baseboard Diffusers

Two "BLEND-AIR" BASEBOARD diffusers for residential heating and cooling systems — Coleman Co., Inc., St. Francis & 2nd St., Wichita 1, Kans. Designed for use with the 3½ in. round duct system developed by the manufacturer, the baseboard perimeter blender is 28

Sheet Metal Mackinery

DESIGNED FOR THE PRACTICAL SHEET METAL MAN



FALLSINGTON'S NEW BACK GEARED HUSKY PRESS

Here is Fallsington's new Back Geared Husky Press — similar to the Fallsington Husky Press except that it is of heavier construction and, instead of a belt drive, is chain and gear driven. The Fallsington Back Geared Husky Press is ideal for short and long runs and is particularly suited to the use of economy dies as used in the aircraft industry.



FALLSINGTON'S NEW 5' PIPE ROLLING MACHINE

The new Fallsington 5' Pipe Relling Machine will rell pipe in one single operation without damage to the pipe or its locking device.

Pipes, 2' to 5' in length, 4" to 10" in diameter, of 30 to 26 gauge metal, can be rolled at the rate of 15 per minute.

This new time, labor and money-saver embodies the most medern aspects of machine tool building. It is easy to handle and occupies a minimum of floor space.

Literature will be sent on request to explain the operation of these two new fallsington machines.

FALLSINGTON MANUFACTURING COMPANY

Manufacturers of Sheet Metal Machinery and Tools
FALLSINGTON PENNSYLVANIA

in. long, 6 in. high and projects 25/16 in. from the wall. The baseboard innerwall register is $14\frac{7}{8}$ in. wide, $13\frac{7}{8}$ in. high and 23/16 in. deep.

Cooling Tower

"TAKE-APART" COOLING TOWER designed to be installed in crowded basements reached by narrow stairs or on roof tops where the expense of a rigger for hoisting can be eliminated — Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22. The towers are available in 5 and 10 ton sizes. Drive shafts and fans are made of stainless steel and the housing is protected with vinyl zinc, vinsynite and chlorinated rubber. The company offers a 20 year guarantee on the wetted deck surface against rotting or damage due to fungus attack.

Oil Fired Counterflow Furnaces

MODEL "DF-AC" COUNTERFLOW oil fired furnace featuring the "Air-Jet" ignitor as standard equipment— H. C. Little Burner Co., Inc., Woodland Ave. & Du Bois St., San Rafael, Calif. The ignitor largely eliminates service problems due to ignitor failure, according to the company. Other advantages of the "DF-AC" line cited are compact design, quiet operation and zero clearance at back and both sides.

Heavy Duty Cut-Off Machine

"Century" Portable circular bladed saw for cutting plastic, steel, aluminum or brass — Aluminum Enterprises, Inc., 17815 Cliff Ave., Detroit 12. Light in weight (85 lb), the saw and stand can be used in the shop or on the job. Its features include precision



cast swivel mounting, heavy welded steel belt and blade guard, and spindle shaft mounted on sealed ball bearings. Fences provide straight or miter cuts. Hand screw adjusts wheel to desired height. The unit uses blades up to 10 in. in diameter. Capacitor motors rated at 1725 rpm, 115-230 volts, 60 cycles, are used.

Ladder Jack and Bracket

MODEL LJB-70 LADDER JACK and bracket designed to fit the top rung of any ladder — Dalsin Metal Products, 3506 Bloomington Ave., Minneapolis 7. It is designed to be fixed to the ladder on the ground and then raised into place; will straddle the average window as well as building corners permitting the use of plat-



forms with working distances as far as 70 in. to the far side of the platforms, according to the manufacturer. Can be used for installing gutter and other rain carrying equipment as well as erection of ductwork inside of buildings.

Punch Press and Dies

HAND OPERATED PUNCH PRESS designed to cut clean, accurate shapes up to 1½ in. in diameter and up to 14 gage — Chase Mfg. Co., 5008 W. Jefferson Blvd., Los Angeles 6. The press will punch round, square, angle, keyway, oval, gear and many other shaped holes (or combinations of holes) in sheet metal, plastics, fiber, etc. The press is made of light weight, tough



aircraft alloy aluminum with impact pressures as high as 15 tons. In addition to a complete line of punches and dies, attachments are available for slotting, notching, riveting and marking operations. All punches and dies are precision machined from heat-treated tool steel and finished ground to close tolerances, according to the manufacturer.

Redesigned Wall Furnaces

REDESIGNED LINE of single and dual wall circulator vented furnaces — Pioneer Furnace Co., 3131 San Fernando Rd., Los Angeles 65. Models are rated from 12,750 to 50,000 Btu, feature increased bottom clearance due to redesigning of the burner unit. Projection into the room is 23/4 in. The baffle design has been improved for greater efficiency, according to the manufacturer.

Control System for Press Brakes

AUTOMATIC ELECTRIC control system for press brakes including foot switch, solenoid operated clutch, automatic switch box and a control panel — Dreis & Krump Mfg. Co., 7404 Loomis Blvd., Chicago 36. The control panel, through individual switches, per-

Easy to Install because it's a complete package Easy to Sell because it's completely enclosed

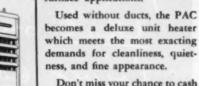


the Reznor PAC

No exposed controls...no protruding burner...no dangling connections. Everything completely enclosed in a compact appliance-styled cabinet. One look at the Reznor PAC and your prospects will become customers. It's the *only* completely enclosed horizontal furnace.

The same features that make the PAC easy to sell make it easy — and profitable — to install, It comes as a complete package. No outside controls or connections. They're all mounted within the main cabinet, And your job is simplified by the built-in draft diverter and by the ease of conversion from horizontal to vertical flue connections.

Three sizes — 75, 100, and 125,000 BTU. Universal burner for any type of gas. AGA approved for all horizontal furnace applications.



Don't miss your chance to cash in. Write today for your copy of Bulletin GNP-52. The Rezner Manufacturing Co., 53 Union Street, Mercer, Pa.



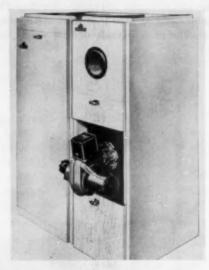


The Design, nstallati omplishmen (F.) Meyer+Bro, Co. Phe Handy Pipe People. Peoria Illinois

mits setting the machine for inching; inching — non-repeat; inching down — self return — nonrepeat; inching — preset stop; inching — preset stop — nonrepeat; double clutch — preset stop — nonrepeat; one or two man operation. The predetermined stop feature provides greater safety for the operator.

Year 'round Air Conditioners

SERIES "MH" HIGHBOY gas and oil fired winter air conditioners with floor mounted blower — Mayflower Air-Conditioners, Inc., East 7th at Duluth Ave., St.



Paul 6. The furnace, when coupled with the series "WAC" summer air conditioner, makes a twin heating-cooling combination for residential year 'round air conditioning.

Oil Fired Wall Furnace

"Monogram" oil Fired wall furnace for use in conventional and prefabricated house construction — The Quincy Stove Mfg. Co., 807 S. Front St., Quincy, Ill. A bulb type limit control prevents overheating in the event of electricity shutdown, according to the manufacturer. Another feature is provision for the installation of one to three takeoff ducts. Flue outlet operates at 0.03 WG, is adaptable to most chimneys.

Oil and Gas Fired Furnaces

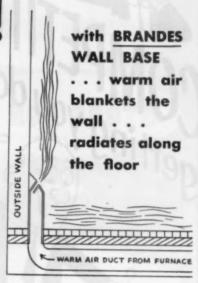
Models BF-O and BFG-O winter air conditioners for oil and gas, designed for use in multiple dwelling unit installations — The Heil Co., 3000 W. Montana St., Milwaukee 1. The oil fired furnace is rated at 84,000 Btu per hr at the bonnet. It is $481/_2$ in. high, $231/_2$ in. wide and 537/16 in. deep (including burner). The gas fired unit has an input rating of 90,000 Btu per hr. It is $481/_2$ in. high, $231/_2$ in. wide and 47 in. deep (including burner). Units are easily convertible from one fuel to the other.

ONLY THE BEST IS GOOD ENOUGH!

Why install just any wall base heating . . . when you can get Brandes . . . the first and patented! Experiments are over! You can be sure of efficient heating if you get the best. Write The Brandes Co., 2046 Winnebago St., Madison 4, Wisconsin. Write today!

BRANDES

WALL BASE HEATING





WRITE TODAY FOR THE AMAZING FACTS AND LEARN HOW YOU CAN CUT PRODUCTION COSTS WITH A BETT-MARR

BETT-MARR MODEL 14SM—A lower priced 2-wheel sheet metal band saw with 13½" throat is perfectly adequate for work not requiring maxi-mum throat depth. MODEL 248-Complete with riser bar insert and 4 sheet metal clamps. Only 61 inches high—sompact, fits most any space—depth 44"; width 22", table sizes 20"x22".

MODEL 249

THE AMAZING 3-WHEEL BAND SAW designed especially for FAST, SMOOTH stacked sheet metal cutting

Save costly labor hours—get smoother, accurate cutting of stacked sheet metal with this new Bett-Marr threewheel band saw. It's big enough to do most any job, small enough to fit most any space, and costs much less than any other comparable power saw.

A Bett-Marr in your shop will pay for itself quickly. Cut your production costs by stacked cutting with a saw that's especially designed for sheet metal cutting.

Does BIG! Costs LITTLE!

190 to 3000 FPM BLADE SPEEDS—Quickly adjusted for cutting iron, steel, forgings (100 FPM); stacked aluminum or galvanized sheets, bronze, brass, copper (600 FPM); wood, plastics, stainless steel (3000 FPM) without blade chatter.

FPM) without blade chatter.

CUTS 50 to 70 STACKED SHEETS—Up to 15 inches per minute; cutting accuracy is assured by case hardened guides with carbide back-up bearings (adjustable up to ½° blade width).

PERFECT BLADE CONTROL—Flanged wheels keep blade in position for smooth radius cuts and perfect straight line cuts. Blade positively will not slip off wheel in operation.

RUGGED ALL CAST FRAME—The rugged, all-cast frame gives perfect stability, eliminates blade chatter and assures smooth-cutting performance at all speeds.

POSITIVE 2-WHEEL CHAIN DRIVE—Prevents blade slippage, All ballbearings are Neoprene sealed for lifetime operation. Blade and wheels are fully enclosed for maximum safety.

HOPKINS, MINNESOTA

BETT-MARR MFG. CO.



new literature . . .

Gas and Oil Lowboy Furnaces

SERIES "AF" oil fired lowboy winter air conditioners are described in bulletin AH-54509 — The Heil Co., 3000 W. Montana St., Milwaukee 1. Illustrations include a cutaway view of the complete unit showing components and close-up photographs of various parts, which are accompanied by brief descriptive text. Also being offered is bulletin AH-54510 covering the "AFG" series of gas fired lowboy winter air conditioning units, available in capacities ranging from 80,000 to 150,000 Btu per hr input.

Blower Wheel

FOUR PACE CIRCULAR presents data on a blower wheel designed especially for the heating and air conditioning industry — Mayne Products Co., 324 Harries Bldg., Dayton 2. Features claimed for the wheel include simplified construction, economy and quietness of operation and maximum strength and rigidity.

Extended Baseboard Air Distributors

CATALOC of baseboard air distribution systems for residential heating and cooling applications features a method for figuring heating and cooling requirements—Gerwin Industries, Inc., Dept. C., 214 Spring St., Michigan City, Ind. Complete installation instructions for "Thermo-Base" systems are included. Illustrated throughout with photographs of typical installations the booklet may also be used as a sales tool in explaining advantages of the system to prospective customers.

Automatic Controls

CATALOG presents information on automatic controls for heating and air conditioning products (28 pages) —Perfex Corp., 500 W. Oklahoma Ave., Milwaukee 7. Included are photographs, dimensional information, and selection data.

Air Conditioning Products

CATALOG of air conditioning products (R-300) features a section containing selection tables designed to simplify the selection of equipment for air cooled condenser locations—Kramer Trenton Co., N. Olden & Breunig Ave., Trenton 5, N. J. Included in the catalog are product photographs, dimensional tables, capacity ratings and shipping weight information.

Thermal Resistance of Air Spaces

INFORMATION on the thermal resistance of air spaces is provided in *The Thermal Insulating Value of Air Spaces, Housing Research Paper* 32, published by the Housing and Home Finance Agency (25 cents)—Superintendent of Documents, Government Printing

Attractive, Rugged HARDWARE by NATIONAL LOCK

FOR HEATING AND AIR CONDITIONING EQUIPMENT



pecial Fasteners That Save Time, Labor, Materials



In addition to providing all types of standard fasteners, NATIONAL LOCK designs and makes specialpurpose fasteners for specific jobs. Let our skilled sales engineers recommend fasteners that will effect important savings in your production.

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NO BLASTS

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... just pure comfort!

WITH STANDARD'S NO. 551 PERIMETER WALL REGISTERS

Air is diffused 4-ways, along the outer cold walls, providing complete 360° hemispheric heating or cooling New fractionator volume control, standard screw holes.

single shutter control, smart appearance, for sidewell or baseboard installation. See for yoursall why Standard's 551 is the best

wall register on the market!

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STANDARD STAMPING & PERFORATING COMPANY 3137 WEST 49TH PLACE, CHICAGO 32, ILLINOIS

Gentlemen: Please send me literature on the Standard No. 551 Perimeter Wall Register.

NAME. COMPANY_

Standard

Office, Washington 25. The report points out that modern trends in home design have created problems in the field of thermal insulation and water vapor migration through walls, floors and ceilings. Data is presented relating to the thermal resistance of air spaces when faced with reflective or non-reflective materials. Included in the report are the results of measurements of the heat transfer across air spaces having various emissivities and thicknesses.

Gas Fired Winter Air Conditioners

BULLETIN HH-826 (four pages) gives complete specifications for lowboy and highboy models of gas fired winter air conditioners-Permaglas Div., A. O. Smith Corp., Box 28, Kankakee, Ill. Units feature ceramic coated heating chambers, "Magic Heet" controls to provide modulated heating, and slow speed blowers. The circular is illustrated throughout with photographs, cutaway drawings and dimensional diagrams.

Power Roof Exhausters

"GYRA-FLO" power roof exhausters are illustrated and described in a four page catalog insert (bulletin GPE-103)-Chicago Blower Corp., 9867 Pacific Ave., Franklin Park, Ill. According to the company, the exhausters are designed to deliver high volumes of air at low noise levels, making them particularly suited for use in ventilating schools, churches, theaters or other buildings where quiet performance is required. The circular is illustrated with keyed cutaway views and diagrams, contains a performance table and a list of special features. Send requests on company letterhead.

Hand and Power Grooving Machines

ILLUSTRATED BULLETIN 76-B presents information on model 48-U universal power groover, designed for closing both single and Pittsburgh lock seams-Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11. Included with detailed data and specifications are step-by-step illustrations of both single and Pittsburgh lock seaming. Also shown and described are other machines available designed to meet a wide range of grooving and seaming requirements.

Welding and Cutting

FOLDER DESCRIBES a 20 minute sound-slide film, available for showings to welding personnel, which shows operators how to follow safe practices with welding and cutting apparatus-Air Reduction, 60 E. 42nd St., New York 17. Also described is "Airco" oxyacetylene welding and cutting equipment including gloves, aprons and sleeves; goggles and spectacles; eye and face shields; torches and regulators; helmets; and arc welding machines.

For true efficiency and economy in gas pressure regulators



Hallmark of

gas heating progress

Originators of Straight Thru-Flow MAXITROL COMPANY

12200 BEECH ROAD

DETROIT 39, MICH.



Convenience and efficiency are two strong selling points in this gas-fired Majestic Incinerator. Both trash and garbage are quietly and quickly consumed through Majestic's patented downdraft Jet-Air action. Installs in kitchen, utility room or basement, eliminating the drudgery and dirt of old-fashioned disposal methods. Majestic's No. 10 model features pilot-flame drying action plus automatically timed, 18,000 BTU burner for complete incineration.

See your Majestic Distributor or write



110-A Erie St.

Huntington, Indiana



Gas Fired Furnaces

THREE MODELS of "Econo-Flow" gas fired winter air conditioners—counterflow, vertical and standard—are described in a four page circular—Stewart-Warner Corp., U. S. Machine Div., Lebanon, Ind. Photographs of each model are included, together with line drawings of typical installations. Also shown is a cutaway view of the "Multi-Fire" heat exchanger and its components. Other equipment illustrated includes gas fired wall furnaces, conversion burners and water heaters.

Sheet Metal Fabrication

SHEET METAL PIECE PARTS and finished products manufactured to specification are illustrated in a 64-page catalog—Chicago Metal Mfg. Co., 3724 S. Rockwell St., Chicago 32. Sections are included on stampings, stainless steel products, rolled angles, round duct, gear guards, air ducts, dust collectors and ventilators.

Notcher for Ventilation Duct

INFORMATION is given on "Speednotch" multiple notcher for ventilation duct in bulletin A (four pages)—Harper Metal Products, Ltd., 27 Layne Pl., San Bruno, Calif. The unit is designed for gangnotching all

necessary notches required in the fabrication of ventilation ducts using the government clip, bar slip or "S" and drive connections. Each of the machine's five punches is equipped with shut-off valves or can be readily removed. This feature allows notching of various types of duct such as straight types fabricated from one or more pieces, heels, throats, cheeks or elbows or similar fittings, ranging from $3\frac{1}{2}$ in. to 10 ft.

Shop Layout

ILLUSTRATED booklet explains how to lay out a shop through the use of templates—Repro-Templates, Inc., Oakmont (Allegheny County), Pa. The brochure, together with experimental sheet of templates, will be sent on letterhead request.

Gas Heating System Checkup

What You Should Know About Gas Heating (16 pages) is designed to educate users of gas heat on the need for a heating system checkup—Metalbestos Div., William Wallace Co., Belmont, Calif. The booklet is available to dealers in quantity for use in consumer mailings.

Summer Air Conditioners

DATA SHEET describes series "WAC" water cooled summer air conditioners available in 2 and 3 ton sizes—Mayflower Air-Conditioners, Inc., East Seventh at Duluth Ave., St. Paul 6.



The Modern Damper Regulator



Means Easier Adjustment and Better Appearance

Designed and produced by heating and air conditioning engineers, Wa-Trol air flow regulator simplifies many problems of ordinary regulators.

The spring-loaded knob of the Wa-Trol means damper adjustment is made by a slight push and turn motion—no tools required. An indicator shows the position of damper—no guessing. Installations can be balanced is an little as half the usual time.

Made of ivory colored Styrene, Wa-Trol's modern design will remain beautiful indefinitely. Wa-Trols are impervious to ordinary temperature and humidity changes; they can't rust, fade or peel.

And, Wa-Trol will save you money on your initial costs!

Available through heating and air conditioning wholesalers. (Distributorships available in some areas.)

THERMAL AGENCY

National Sales Agents

THERMAL BUILDING

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Wisconsin











MODEL O

MODEL A

MODEL 8-41

MODEL 8-51

MODEL 8-61

- ◆ A complete line. . . with Wisconsin Burners you can offer your customers a choice of 5 sizes. . . . from 0.65 G.P.H. to 25.00 G.P.H.
- Every Wisconsin Burner is factory tested under actual firing conditions. Their reputation for quality has made them a leader in the field.

Available with the famous, efficient Shell Combustion Head.

FOR INFORMATION ON AVAILABLE TERRITORIES, WRITE

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2720 EMIL ST. .

MADISON 5, WISCONSIN



You, too, will find Duro-Dyne's Precision Engineered Damper Hardware easy and inexpensive to use. No skill or specially trained labor is required. Blade alignment is assured every time because of the hardware's full adjustability and precise uniformity. Since corrosion resistant materials are used throughout, perfect operation under all conditions is assured.

Each inexpensive Duro Blade Kit contains the necessary precision hardware for installing one blade for parallel action. Individual parts also available.

OTHER DURO-DYNE PRODUCTS

Duro Metal-Fab Flexible Duct Connector Material • Duro Vane Rail for making low cost air turning vanes • Greyhound Portable Spot Welder

Products formerly made by Parker-Kalon

Jiffy and Dial Regulators • Unxid and Heavy Duty Quadrants • OX and XX Metal Punches • "Shur-Grip" File Handles

DURO-DYNE

CORPORATION

800B Third Ave. . New Hyde Park, N. Y.

we hear that . . .



OFFICIALS of the Philadelphia plant of Joseph T. Ryerson & Son, Inc., display the presidential citation awarded for providing opportunity in employment to the physically handicapped

FOR ITS EFFORTS in providing equal opportunity in employment to physically handicapped workers, the Philadelphia plant of Joseph T. Ryerson & Son, Inc., recently was awarded a presidential citation. Dr. J. L. Baker of the President's national "Employ the Physically Handicapped" committee made the presentation.

▶ KEITH T. DAVIS has been appointed technical director of Affiliated Gas Equipment, Inc. He will continue his activities in representing the corporation in trade association programs and contacts with major gas utilities. Mr. Davis, before accepting his new position, had been directing the engineering program of the company's Bryant Heater Div.

WESTINGHOUSE ELECTRIC CORP. plans to spend more than \$3 million for facilities to produce window type room air conditioners at its Appliance Div. plant in Springfield, Mass. Manufacturing operations are expected to begin by the middle of next year.

H. C. McDaniel has been appointed manager of technical information for the company and will supervise both technical publicity operations and the Westinghouse Engineer magazine.

MINNEAPOLIS-HONEYWELL Regulator Co. has moved its Los Angeles branch and Pacific region head-quarters personnel into a new building at 6620 Telegraph Rd., Los Angeles. Office area covers 15,000 sq ft and the remainder of the 21,000 sq ft building will be used for shop and warehouse purposes.

The company reports that major home developments are now using electronic systems to control heating in winter and cooling in summer. In St. Louis, the units are being used in a 1000 home community;



No raw edges to rust...

Cincinnati Elbows, hot dipped in zinc after formation, positively guarantee a rust-proof longer life. These elbows are tapered to fit any size standard pipe. Available in any size, angle and metal, including galvanized steel, stainless steel, copper and aluminum.

Give your customers the best elbow available.

ASK YOUR JOBBER.

Cincinnati Elbows fit better because they're made better!

CINCINNATI ELBOW CO. 4730 MADISON RD., CINCINNATI 27, OHIO

An Exhaustive and Clear Explanation of Manual No. 7 That Shows You-



The author of "HOW, WHAT and WHY"—Professor S. Konzo of the University of Illinois—is one of the nation's foremost authorities on every phase of residential air conditioning and warm air heating. It was in Professor Konzo's office that the brunt of the work of assembling data and making the calculations for Manual No. 7 was carried out, and he was, therefore, ideally qualified to prepare this explanation of the Manual's background, make-up nd correct use.

Table of Contents

- The New Manual Simplifies Engineering
- How to Figure Heat Losses Furnace Selection and Rating
- Blower Selection and Blower Ratings Successful Blower Operation
- Registers—Locations, Types, Sizes Procedure for Making Plant Layouts
- Equivalent Length of Fittings
- Equivalent Length of Registers
- Sizing the Branch Ducts
- How Tables 8 and 9 Were Established
- Sizing Return Air Ducts
- Trunk Duct and Bonnet Construction
- Sizing of Trunk Ducts
- How to Adjust and Balance a Warm Air Winter Air Conditioning System
- Reference List
- Cross Index

-HOW to Use It Correctly

-WHAT Experience Is Behind It

-WHY Every Dealer Should Use It

"The HOW, WHAT and WHY

of the

Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems"

by S. KONZO

-Engineering Experiment Station, University of Illinois Special Research Professor-

75 Pages - 81/2" x 11" - \$1.00

Users of Manual No. 7 will find this "HOW, WHAT and WHY" booklet invaluable toward acquiring a clearer understanding of the Manual and properly applying it in the planning and installa-tion of warm air winter air conditioning systems. Published originally as a series of articles in the magazine AMERICAN ARTISAN, this clear and comprehensive analysis has proved so helpful to dealers everywhere that now, in response to a wide demand, it has been reproduced in full in this new 75-page booklet "HOW, WHAT and WHY."

Professor Konzo begins "HOW, WHAT and WHY" by telling why a standard designing procedure for warm air winter air conditioning systems was needed by the industry. He reveals how the country's leading manufacturers of warm air heating equipment got together to work out such a method . . . how nearly 200 of the industry's key engineers held scores of meetings over a long period to coordinate data and experience in working out the dependable, simplified design and installation procedure which Manual No. 7 now offers.

Following this introduction, "HOW, WHAT and WHY" goes into a detailed explanation of the designing procedure itself, section by section. It shows the research and experience behind every rule, recommendation, and table the Manual contains. It tells why such factors as temperature drop in ducts, c.f.m. air delivery, air changes per hour, and various other factors which were once considered vital in the planning of forced air heating systems no longer need concern the designer. It provides much interesting supplementary information and comment which helps make each step in the suggested procedure easy to follow and assures the user of the Manual's complete soundness.

An especially useful feature of this explanatory booklet is a Cross Index which permits finding quickly full information about any item in the Manual which is not wholly clear. All in all, this "HOW, WHAT and WHY" booklet will not only assist owners of the Manual to use it to the fullest possible extent, but it will, in the bargain, add materially to their knowledge of every phase of winter air conditioning.

----- ORDER BLANK -----

AMERICAN ARTISAN 6 No. Michigan Ave., Chicago 2, Ill.

Attached is my remittance of \$1.00 for which please send me one copy of "HOW, WHAT and WHY."

Individual _ Firm _

Street Address_

City and State_

WELDERS ALWAYS ASK:



Here's why the Lincoln "Shield-Arc" welder is the standard of comparison for arc welders:

- 1. "Shield-Arc" delivers any type of direct current arc . . . not one or two types.
- 2. "Shield-Arc" delivers constant output of current, regardless of line voltage fluctuations.
- 3. "Shield-Arc" welders are constantly improved to weld faster . . . at lower and lower costs.

LINCOLN "Shield-Arc" SAE DC Motor-Generator Welder 200-300-400-600-900 amps.



GET LATEST FACTS on cutting your welding costs. Send for Bulletin 459, available by writing on your letterhead to:

THE LINCOLN ELECTRIC COMPANY

Dept. 3906 · Cleveland 17, Ohio

The World's Largest Manufacturer of Arc Welding Equipment

we hear that

(Continued)

in Philadelphia, they are being featured in a 1200 home development; and in West Hartford, Conn., systems are being built into 64 homes of split-level and ranch type designs.



L-P SERVICE MEN from Missouri and surrounding states attend a class on "Trouble Shooting Your Heating Problems" conducted by Charles C. Owen, Janitrol Heating and Air Conditioning Div., Surface Combustion Corp.

- ▶ CHARLES C. OWEN, western sales manager for Janitrol Heating and Air Conditioning Div., Surface Combustion Corp., was one of the instructors at the school for L-P gas service men recently held at the Rolla School of Mines under the auspices of the Missouri L-P Gas Association. Total enrollment for the conference was 72.
- THE BUILDING constructed by Armco Steel Corp. at its East Works plant to house its new coil annealing furnaces has an unusual air cooling installation. Large fans bring in outside air which is first filtered, then blown upward through trenches in the floor and finally allowed to escape at the top of the building. The company reports that the system provides comfortable working conditions and permits the fans in the furnace bases to operate under extremely high temperatures.
- ▶ GENERAL FILTERS, INc., has completed a new plant in Scarboro, Ontario which houses all of the manufacturing, sales and office facilities of the company's Canadian subsidiary, Canadial General Filters, Ltd.
- ▶ WORTHINGTON CORP.'s air conditioning and refrigeration service department plans to conduct a series of field service meetings with special courses on servicing air conditioning, gas and oil heating equipment in seven cities throughout the country beginning January 5. E. D. Lindsley, assistant manager of the company's Holyoke air conditioning and service department, will discuss such topics as central systems, package equipment, installation and maintenance, etc. In commenting on his plans for these meetings, Mr. Lindsley stated that more and more emphasis is being



Now you can have a burner compact enough to fit the smallest jacket extensions without sacrificing quality or efficiency. Fitting a minimum extension of only 84% and measuring 151½6 wide, the Sun-Ray Bantam makes possible important space savings in the design of boiler and furnace units with limited clearances.

Despite its truly small dimensions the Bantam has the same high quality construction and efficiency as all Sun-Ray burners.

FEATURES.

Exclusive Perimi-T-Aire Metering* for uniform, unimpeded air intake-eliminates all dead spots. Finger-tip dial facilitates precise adustment of air volume.

One Piece Precision Machined Casting with housing scroll designed for smooth, efficient air delivery.

designed for smooth, efficient air delivery.

Pressure Seal Design assures efficient, quiet, uniform air delivery. Unique bulkhead seals low pressure from high pressure air, eliminates pulsation.

Plus: The use of highest quality standard parts throughout; easy servicing, with swing-away transformer exposing all vital parts. All models are approved by Underwriters' Laboratories, Inc., C.S.A. and all other leading authorities. Capacity is 0.5-2.00 g.p.h. Available flanged or base mounted.



ATTENTION BOILER AND FURNACE MANUFAC-TURERS — Sun-Ray's engineers will cooperate in adapting the Bantam to your particular require-



· JAMAICA 35,



PHOTO—Leveling Sonoairduct prior to main pouring. Built by Superior Construction Co.; Wray Plumbing & Heating, Heating Contractors, Greensboro, N. C.

GREENSBORO, N. C.

Home for All America

*As recently featured in Better Homes & Gardens, September, 1954 issue.

INSTALLED

FIBRE DUCT

Economical, lightweight SONOAIRDUCT saves installation costs in gas and oil slab-floor warm air heating systems. It is aluminum foil lined and wrapped outside with weather - resistant asphalt duplex kraft. Permitted by F.H.A. and widely used by contractors everywhere. Sizes 2" to 36" I.D., up to 50' long. See our catalog in Sweet's.

WRITE for complete information and prices



Sonoco Products Company

HARTSVILLE S.C.

placed on oil and gas heating as related to the company's new year 'round air conditioner. Meetings are scheduled to be held in the following cities: New York City, January 5; Washington, D. C., January 12; Atlanta, January 19; New Orleans, January 26; Chicago, February 7; Los Angeles, February 15; and Seattle, February 22.



A DISTRIBUTOR discusses the features of the "Imperial" furnace recently introduced to the field by Payne Furnace Div., Affiliated Gas Equipment, Inc., with division officials

THE PAYNE FURNACE DIV., Affiliated Gas Equipment, Inc., recently introduced its new "Imperial"

furnace to distributors attending the division's regional conference held in Dallas. A portion of the meeting was devoted to the presentation of promotion material designed to help dealers in merchandising the new model.

- BERGER MFG. DIV., Republic Steel Corp., has set up a new customer service "storage engineering." Warm air heating and sheet metal wholesalers will be interested to learn about this new service, which is described as "specialized consulting in planning, laying out and installing bins, shelves and racks in storage areas." C. E. Howes, the division's general sales manager, says, "Too often, the function of storage area planning gets no experienced attention whatever. As a result, many companies allocate too little or too much space for storage facilities, resulting in inefficient operation or waste of expensive floor space."
- ▶ CARRIER CORP. recently received a bronze "Oscar of Industry" award for submitting the best 1953 annual report of the air conditioning industry in the annual Financial World survey of 5000 annual reports by industry.
- ▶ Sid Harvey, Inc., recently invited executives of out of town oil burner servicing companies to visit its rebuilding plant. Visitors arrived via regular scheduled air line flights and were met at the airport with

CUT COSTS

Automatic Decoiling and Shearing by Dahlstrom

DECOILS—FLATTENS SHEARS—MEASURES

Gauge capacity 12 gauge and lighter. Widths up to 72". Cut lengths to specific requirements. Cutting tolerances of 1/32". Simplified length adjustment. Variable speed range 50 to 150 FPM. Edge trimming also available.

By Using Coiled Steel or Aluminum Instead of Costly Strip Materials

A Dahlstrom "Complete Line" consists of hydraulic expandable mandrel coil reel, roll straightener with all rolls power driven, hump table, high speed shear, conveyor type measuring and take-off unit.



All welded, antifriction bearings, ground shafts and centralized control panel.

Dahlstrom MACHINE WORKS

Roll forming machines, coil reels, roll straighteners, flying cut-offs and decoiling roll feed lines.

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Phone Spring 7-3670

These units are designed and built to fit your needs. When writing for descriptive data, give con to details of re-



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Manufacturers' Agents

Are you interested in securing additional lines?

We are occasionally asked by our manufacturer advertisers to suggest the names of manufacturers' agents in various sections of the country whom they can contact in regard to representation of their warm air heating, residential air conditioning and sheet metal products.

If you would like your name listed on our records for inquiries we may receive on your territory, we invite you to write us. There is no charge in connection with this service.

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The proven design of Rondall's self-aligning, self-'ubricating pillow blocks is in keeping with teday's trend toward more and more and more and more and more and expensive Randall "ideap well". Buil assembly that offers a unique double lubricating principle. It combines Randall's exclusive graphited bearings with greese or oil type lubricants which assures controlled, automatic lubrication for long periods of trouble-free operation.

If you use bearings on your equipment it will pay you to investigate Randall . . . the most complete line of graphited branze sleeve bearing pillow blocks available anywhere. Write us, today!

BRONZE BUSHINGS
PILLOW BLOCKS
SHEET LUBRICATOR

dall

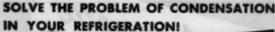
GRAPHITED BEARINGS THRUST WASHERS

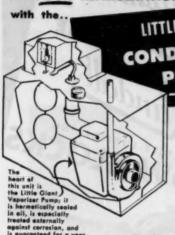
SAFETY COLLARS
BRONZE CASTING

RANDALL GRAPHITE BEARINGS, INC.

1000 S. Greenlawn Ave., Lima, Ohle

3





CONDENSATE PUMP

Designed especially for removing the condensation of air-conditioning units and mechanical refrigeration... also useful in sump installation. Model C-2 operates on 110 velt, 60 cycle current; Model C-3 available for either 110 velt, 60 cycle current or 220 volt single phase.

- . Complete and ready to install
- · Positive displacement switch
- . Coaled throughout to prevent corrosion
- Vaporizer Pump guaranteed for one year
- · Completely automatic
- * Small & Compact . . . Quiet in Operation

Little Giant Vaporizer Co., Inc.

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O. Box 353

Oklahoma City, Okla

YOUR DOLLAR GOES FARTHER ... with RELIABLE GAS PRODUCTS

TOP QUALITY at LOW COST!



RING BURNERS Single, Double and Triple

COMPARE:

• QUALITY • EFFICIENCY

PRICE

RELIABLE offers "extra value" in a complete and versatile line of the very highest quality gas appliances. This quality is assured by the testing of every appliance thoroughly before it leaves the factory.

WRITE FOR COMPLETE CATALOG:

RELIABLE GAS PRODUCTS

419 H Avenue, NW Cedar Rapids, Jawa

A MORE COMPLETE



DRILLED PIPE



BENCH FURNACES



NDUSTRIAL BUNSEN



STRAIGHT OR ANGLE



MELTING POTS

a helicopter which transported them to the rebuilding site.

The company has recently acquired the oil burner parts inventory of Norris Sales Co. and has leased the store formerly occupied by Norris at 939 E. Main St., Norristown, Pa.



LOUIS BRETHAUER, Lansing dealer, replenishes his stock of Dowagiac furnaces

- ▶ Louis Brethauer, Lansing, Mich., dealer for Dowagiac Steel Furnace Co., frequently expedites rush orders by driving to the factory and picking up the desired model himself. Then figuring that he can haul a truckload as easily as one unit he makes the trip really worthwhile by picking up several additional models.
- SEVENTY-THREE oil heat dealers and technicians from the New England area recently attended a clinic at Burner Supply Co., Beverly, Mass., to discuss the features of the Wayne "Dial-O-Meter" low pressure oil burner which is equipped with a dial for selecting oil ratings.
- THE HOME HEATING and Cooling Dept., General Electric Co., was one of the exhibitors at the Mortgage Bankers Association exhibit held in Chicago recently. W. A. Mulcock, regional manager for the Chicago area, said that the growing trend to air conditioning makes it necessary for mortgage bankers to be fully informed on this new phase of home modernization.

Justin Neuhoff, manager of engineering of the commercial air conditioning department, was one of the featured speakers at the "Panorama of Progress" — a two-day air conditioning and refrigeration conference held at Columbia University.

The company presented its 1955 sales plans for packaged air conditioners in a recent series of meetings with distributors held in New York City, Cleveland, Chicago, Atlanta, New Orleans and Los Angeles. F. J. Van Poppelen, general manager of the Air Conditioning Div., described the G. E. dealer profit plan. This plan is a guide for year 'round sales activity, covering market opportunities, product and warranty, advertising, sales helps, and training and financing. One of the key points is that, under the plan, an end



True-the fastest, cheapest way to fabricate high quality single or hollow air turning vanes is with DURO-VANE-RAIL.

Duro-Vane-Rail eliminates drilling, riveting, screwing, cutting tabs on vanes and all layout, so that savings up to 70% are made on installed costs. As a result thousands of shops have changed to making air-turning-vanes the profitable Duro-Vane-Rail way.

Duro-Vane-Rail offers many advantages in construction and performance. Vane noise is eliminated by the rattle-proof, positive method of attaching vanes to rails. There is no "whistle" because the Duro-Vane-Rail lies flat in the duct.

Available at your Duro-Dyne and Parker-Kalon distributors. Literature available upon request.

OTHER DURO-DYNE PRODUCTS

Duro Metal-Fab Flexible Duct Connector Material * Duro Blade Kit of precision built hardware for multi blade dampers * Greyhound Portable Spot Welder

Products formerly made by Parker-Kalon

Jiffy and Dial Regulators • Unxid and Heavy Duty Quadrants • OX and XX Metal Punches • "Shur-Grip" File Handles

DURO-DYNE

CORPORATION

800B Third Ave. . New Hyde Park, N. Y.

Make your own PIPE and DUCT with . .



-1





user may purchase cooling equipment during the fall and winter with only 10 percent down, deferring other payments until the next year's cooling season begins. Other phases of the plan, including dealer inventory financing, dealer warehousing plan, and work-in-process financing, are designed to enable dealers to carry an adequate stock and make immediate installations without tying up working capital.



NEW RESEARCH CENTER at Irwin, Pa., will serve as research and development headquarters for the seven manufacturing divisions of the Robertshaw-Fulton Controls Co.

- A \$1 MILLION research center that will develop new control devices for heating equipment has been opened at Irwin, Pa., by Robertshaw-Fulton Controls Co. Total floor area of the new building is approximately 31,000 sq ft.
- LEADERS IN THE FIELD of home insulation attending the annual meeting of the National Mineral Wool Association reported that sales during the past year were the highest for any 12 months in the history of the industry.
- THE VIKING Air Conditioning Div., National Radiator Corp., recently held its annual fan meeting. Dick Gang, assistant sales manager, explained the features of the 1955 line to division salesmen and representatives.
- THE AIRTEMP DIV., Chrysler Corp., has substantially enlarged its training program for 1955. Several one-week special schools and conferences for dealer and distributor personnel have already been held and a number of others are scheduled. In addition, residential heating and air conditioning correspondence courses are being offered as well as educational films and "packaged" training kits which have been developed for field use. Schools scheduled for dealer and distributor personnel are:

Cooling Dealer Packaged Air Conditioning Service Schools — March 21 to 25, 1955; April 25 to 29, 1955

Cooling Dealer Packaged Air Conditioning Service and Application Schools — January 10 to 14; Febru-



"CORRECT PRACTICE in OIL HEATING"

NOW AVAILABLE TO YOU!

A complete reprint of the valuable series

by J. J. Mirabile

This practical series covers every angle of oil burner work, including arrangement of shop... stocking of parts... record-keeping... installation procedures... the handling of crews... how to make heating surveys... how to size combustion chamber... how to install thermostat... how to start the burner... how to use testing instruments... and how to operate a service department. It contains, as well, a complete list of causes and cures of oil burner troubles that will serve as a reliable guide in making service calls.

Every shop handling oil burner jobs should own this book. Full size, $8\frac{1}{2}$ by 11 inches — 57 pages of practical helps. Send \$1.00 for a copy to the address below.

KEENEY PUBLISHING COMPANY

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Chicago 2, III.

SCHAEFER



chimney cleaning brushes

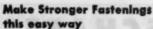
AVAILABLE IN ROUND OR SQUARE DESIGNS

You'll do a better, faster cleaning job with the SCHAEFER Chimney Cleaning Brushes. Precision built, in all sizes for round or square chimneys. Choice of flat tempered steel wire, round black tempered wire, or selected Bassine Fibre, with threaded nipples or loops. Write for catalog and prices.

LOOK for the trademark SCHAEFER BRUSHES

SCHAEFER BRUSH MFG. CO. 117 W. WALKER STREET - MILWAUKEE 4, WIS. BUY SCHAEFER







PARKER-KALON®



Make any cutcurved, straight or irregular, faster, easier and better with less material waste on a Beverly Throatless Shear. You can turn work to any position, and make a clean cut as you go. Handles heavy gauges with ease – lighter metals without distortion. 4 models—capacities 18 gauge to \(\frac{\pi}{16} \) mild.





INSIDE SLOTTER
8" Reach—16 ga. capacity

Makes inside slotting cutting faster, easier, cleaner. Punch and die arrangement of 5 blades assures acction. Cutt 3½° x ½° or 2½° x ½° ist at one stroke. Throat design permits pivoting work at any point in stroke for special inside cuts. Note sample cuts at left.

See your Beverly Dealer or write far illustrated catalog.

Beverly SHEAR MFG. CO. 3020 W. 111th STREET . CHICAGO 43, ILLINOIS

ary 14 to 18; March 7 to 11; September 12 to 16; September 26 to 30.

Packaged Air Conditioning Cooling Distributor Sales and Application Conference — February 28 to March 4.

Residential Cooling Dealer Service and Application Schools — January 17 to 21; February 21 to 25; March 14 to 18; May 2 to 6; September 19 to 23.

Residential Cooling Distributor Sales and Application Conferences — January 24 to 28; March 28 to April 1.

THE WILLIAMS HEATING DIV., Eureka Williams Co., is basing its fall sales campaign on building up the prestige of the dealer in his local community. "The campaign, which includes direct mailing pieces to the consumer, radio, television, local newspaper and national advertising, will stress the importance of the services of a 'practical heating engineer' in the installation and servicing of home heating equipment," according to Charles G. Branch, manager of the division. "We think it is important that the public understand the extra service that is available through an experienced dealer. Quality begins at the factory, but real satisfaction by the customer doesn't start until the right equipment is installed right and serviced right."



THE FERDINAND DIECKMANN CO.

ESTABLISHED 1871

CINCINNATI 22, OHIO

P.O. Station B

- STODDARD INDUSTRIES, INC., has begun producing for general use the electrostatic filters for air conditioners built for and introduced nationally this year by Hotpoint Co. Main office and plant of the Stoddard company are at 1545 Kingsbury St., Chicago.
- EXCELLENT RESULTS have been obtained from a recent community level sales campaign conducted by General Controls Co. in Wichita, Kans. Similar campaigns are scheduled for a number of other cities. Purpose of the program, according to J. F. Ray, vice president in charge of sales, is to carry on, in one selected community at a time, an intensive educational and sales promotional campaign which will inform a maximum number of dealers and home owners about automatic controls in general and about the company's products in particular. Various types of media are used, including newspapers, radio and television, direct mail, etc.
- NORMAN CHEMICAL Co., St. Paul, has purchased the formula for "E-Z" fuel oil soot destroyer from Healy Ruff Co. According to John J. Kelly, president of the Norman company, new plans for promoting and merchandising the product are ready, and dealers and wholesalers are invited to write for further information.



This CHICAGO hand bending brake is ideal for bending sheet metal up to 18 gauge and 24" wide. Model and experimental shops, production departments find this machine unmatched for single pieces or production runs in folding, box and pan work, and a limitless variety of straight bending operations. Very little experience is required to do accurate and fast work.

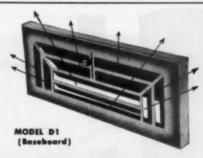
Write for full particulars

Steel Bending Brakes for over 50 Years

44







NEW DIFFUSER TYPE REGISTER FOR HIGH VELOCITY HEATING AND COOLING

- No Whistles
 No Cold Spots
- · Directs Heat Where You Want It

This new Model D Diffuser type register directs a broad expanding air stream, which follows the walls and calling, passes back of draperies and does not hit the furniture. High velocity and high officiency insure even distribution of air without cold spots. Busined to replace standard forced air registers or equal prices. Complete list of sizes. This register is an addition to the National line of registers and grilles which includes all types and sizes to meet any heating or air conditioning requirement.

WRITE FOR CATALOG





und lighter pieces . . . Slightly longer on bulkier pieces

MAKES PERFECT DRIVE-CLEATS TOO

The ONLY tool that does both.

A complete drive cleating tool...
no set-up time...no adjustments.
Handy to take out to the job when not needed in the shop. Turns idle time into production time. Flanges any square duct up to 20 gauge.
Quickly pays for itself in time, material and labor savings.

No. 12 Smith's Cleat Bender

(12" wide) . . \$46.20"

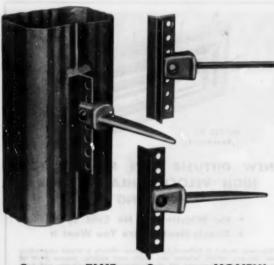
No. 18 Smith's Cleat Bender

(18" wide) . . \$72.60*

*F.O.B. Waukegan, Illinois Prices subject to change without notice PERFECT
DRIVE CLEATS
fit the duct without
the use of a screwdriver.
TREMENDOUS SAVINGS
in erection time and labor.

R. E. SMITH

1124 Elizabeth Avenue . Waukegan, Illinois



F & F CONDUCTOR FASTENERS

Take less time to put in . . . make a more secure, permanent installation. Fastener is entirely concealed. Pipe stands ½" away from wall. Cadmium plated malleable iron drive (flat for bricks, round for wood) bolts to galvanized or copper perforated clip, adjustable for height. Clip is soldered to back of conductor. Write now for details and prices!

FRANCK and FRIC

appointments . . .





R. J. Berkshire

H. E. Rossell, Jr.

8

- ▶ R. J. BERKSHIRE as marketing manager and H. E. Rossell, Jr., as sales manager of the Sunbeam Air Conditioner Div., American Radiator and Standard Sanitary Corp. Mr. Berkshire will supervise and coordinate activities of the advertising and sales promotion, dealer development and market research departments. He was formerly manager of heating sales. Mr. Rossell will be responsible for operations of the division's field sales force. He had been manager of the dealer development program since January and before that was district sales representative in the Silver Springs Washington, D. C. area.
- ▶ BRUCE EPSTEIN as advertising and sales promotion manager for Lau Blower Co. Mr. Epstein was formerly advertising manager of the Willard Mfg. Co.



Bruce Epstein



Philip C. Kosch

- ▶ PHILIP C. KOSCH as manager of sales training for the Bryant Heater Div., Affiliated Gas Equipment, Inc. Before joining the division, Mr. Kosch was training school manager for the Winkler Div., U. S. Machine Corp.
- ▶ JOHN C. WINGET as manager of Armeo Steel Corp.'s marketing service department. Mr. Winget joined the company in 1933, has served as supervisor of consumer markets and as manager of the development engineering department.
- R. E. FRIEND as assistant manager of the Permaglas Div., A. O. Smith Corp. W. W. Higgins has been designated director of engineering and L. T. Tegler chief engineer of the water heater department.

WHEN NATURE WON'Tquickdraft WILL!

Looking for a solution to heating installations hampered by shortness of draft? If your survey indicates chimneys too low, trees too high, smoke pipe run too long, or other low draft

J.

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16



problems, QUICKDRAFT is the ans

QUICKDRAFT is the unique mechanical draft induction unit, designed to create a draft instantly for any type of heating equipment.

QUICKDRAFT is a dream come true for the heating installations formerly considered "sick". It positively stops chattering and pulsation (oil), condensation (gas), puffing and socting (coal). It doesn't obstruct the smoke pipe, can be vented through walls or short stacks.

Get all the facts. You'll want to use Quickdraft on your next job - and on all of them from now on. Ask your jobber-or write us for name of Quick-



draft jobber nearest you. QUICKDRAFT COMPANY, 1150 So. Erie Blvd., HAMILTON, OHIO.

CLEAN EVERY TYPE FURNACE QUICKLY EFFECTIVELY with a

GRAND RAPIDS de luxe FURNACE CLEANER

Large air volume and high velocity give the Grand Rapids Furnace Cleaner maximum recovery capacity. This means faster, more efficient cleaning for every type of furnace or boiler . . . plus more jobs and larger profits for you. Standard groups of attachments available with each Furnace Cleaner are designed to reach into and clean every part of the heating plant.

Service your furnace cleaning jobs with a Grand Rapids DeLuxe Furnace Cleaner. It is sturdy, long wearing and constructed to do a thorough cleaning job under the roughest conditions. Write today for information.

DOYLE VACUUM CLEANER CO.

227 Stevens St., S.W. Grand Rapids 7, Michigan

Convert Gravity Furnaces With A CIRCULATAIRE Bonnet Blower



CIRCULATAIRE ELIMINATES COLD ROOMS, BALANCES HEAT DISTRIBUTION, SAVES FUEL

CIRCULATAIRE solves the problem of "bard to heat" rooms, beests warm air quickly through all the heating pipes. CIRCULATAIRE is casily and quickly installed without removing the honner. Packaged unit includes motor and fan control. No new sheet metal work required, no changing of cold or warm air pipes, no b. Hies to be built. The CIRCULATAIRE is rigid, quiet and officient in operation.

NOW READY — New CIR-CULATAIRE Sales Aids add af-factiveness to salling interview, conserves valuable selling time and increases sales.

A COMPLETELY PACKAGED UNIT Nothing for the dealer to furexcept limited one

GET THE FACTS TODAY! WRITE ... CIRCULATAIRE DIVISION OF CORLETT TURNER CO.



The ARMSTRONG COMPANY

241 S. Post Street

Detroit 17, Michigan

These hammers are used by workmen everywhere because their weight and balance make jobs easier. Whitney hammers are accepted because of perfect balance, the leather grip which CAN'T loosen, and because the sheet metal edge cannot damage the handle neck. One-piece prevents breakage and splintering. Made in both polished and black finish. Please write us for literature

Carried in stock all leading iobbers. ROCKFORDIL



ALIEN COOLER &

VENTILATOR INC.

ROCHESTER, MICH.

Ventilators for Every Commercial and Industrial Need

appointments

(Continued)

- R. A. HOSSINGER and H. J. Kettleborough as vice presidents of H. D. Conkey & Co., Conco Engineering Works and Field Control Div. Harold B. Goebel was appointed treasurer to succeed J. P. Gallagher, who will continue as secretary of the company.
- HENRY A. BOURNE as Pacific Coast sales manager for Republic Steel Corp., succeeding Harvey A. Craig, who has been named head of the bolt and nut sales division. Curtis C. Snyder has been appointed district sales manager for the Los Angeles area.
- JOHN A. WOLFF as sales manager of the Heating Controls Div., General Controls Co. Mr. Wolff will coordinate all sales activity for heating controls for the company's 38 regional and branch offices. He was formerly with Milwaukee Gas Specialties Co., where he served as national sales manager.



John A. Wolff



Walter E. Duffy

WALTER E. DUFFY as sales manager of the Mor-Sun Furnace Div., Morrison Steel Products, Inc. Mr. Duffy has been with the firm since 1945. Starting as a furnace engineer, he has successively held the positions of project engineer in charge of furnace design; manager, Mor-Sun Heating Supply Div.; and assistant sales manager, Mor-Sun Furnace Div.



John M. Sibarium

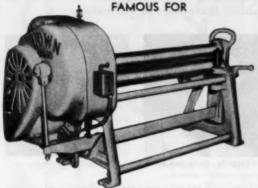


Edward Black



JOHN M. SIBARIUM as sales representative for General Filters, Inc., handling sales in the area formed by metropolitan New York, Long Island and the northern part of New Jersey. Edward Black and James Edgar will share the territory comprising southern New Jersey, Delaware, Maryland and eastern Pennsylvania. Fred Bottiger will handle the state of Con-





SLIP ROLL FORMING & PLATE **BENDING MACHINES**

Metalworking Shops: Write for free literature on rolling metal

SAN ANGELO FOUNDRY & MACHINE COMPANY 1000 Upton San Angelo, Texas

Dealers in Principal Cities

Statement of Ownership and Management of

AMERICAN ARTISAN

for October 1, 1954

The following is a statement of ownership, management, etc., as required by the act of Congress of August 24, 1912, as amended by the acts of March 3, 1933 and July 2, 1946 (Title 39, United States Code, Section 233) of American Artisan, published monthly at Chicago, Ill., for October 1, 1954.

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, F. P. Keeney, Chicago, Illinois.

Editorial Director, C. M. Burnam, Jr., Chicago, Illinois.

Editor, C. M. Barnes, Chicago, Illinois.

President, Chas. E. Price, Glencoe, Illinois.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding I per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Keeney Publishing Company, 6 North Michigan Avenue, Chicago 2, Illinois, Stockholders: F. P. Keeney, Chicago, Illinois; W. J. Osborn, Fairfield, Connecticut; Chas. E. Price; Glencoe, Illinois; Robert A. Jack, Cleveland Heights, Ohio.

- The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mort-gages, or other securities are: None.
- 4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiand's full knowledge and belief as to the circumstances and conditions under 'which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

Sworn to and subscribed before me this 7th day of September, 1954.

Grace E. Waymire.

(SEAL)

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[My commission expires February 10, 1958]

SPENDED FURNACES



SPACE SAVER...and a Labor Saver

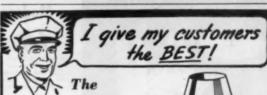
It comes completely assembled including combustion chamber. For Garages, Service Stations, and Basementless Homes. Made in sizes from 75,000 BTU to 600,000 BTU.

Approved by Leading Oil Companies, Underwriters and Municipalities. WRITE TODAY FOR FULL DETAILS

QUIET AUTOMATIC BURNER CORP.

33-35 BLOOMFIELD AVE

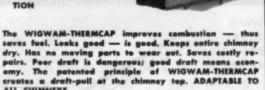
NEWARK 4, N. J.



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Eliminates.

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- SLUGGISH DRAFT DAMAGING ACIDS
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- CREOSOTE
- RAIN MOISTURE FUEL GAS CONDENSA-



ALL CHIMNEYS. Special WIGWAM-THERMCAP representatives' contract available to qualifying dealers. Write for complete in-formation, literature & instruction sheet.

Boston Machine Works Company

Oil Heating Supplies Division Manufacturers, Lynn Mass

necticut, M. W. Kasper will represent the company in the state of Florida.







Albert A. Miskulin

- WARREN J. LOUGHRAN as assistant manager for the St. Louis office of Inland Steel Products Co. Mr. Loughran has been with the company since 1940. Albert A. Miskulin has been named sales representative in the northeastern Illinois territory. He will cover Kankakee and Will counties and part of
- ▶ GERALD G. WALKER, JR., as branch manager of the Buffalo sales office of Minneapolis-Honeywell Regulator Co., succeeding R. W. Forster, who recently was

named branch manager at Boston. Prior to his recent promotion, Mr. Walker was district manager in Saginaw, Mich., in which position he is being succeeded by Henry W. Araucz, who was previously branch industrial sales manager in Columbus.

DALE H. RENNEBOHM as head of the Wayne Home Equipment Co.'s north central sales division. He will maintain headquarters in Minneapolis.



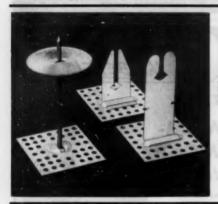
Dale H. Rennebohm



-

Harold Wellnitz

- MAROLD WELLNITZ as national director of service education for Perfex Corp.
- ROBERT J. HIRSCH as district sales manager for Lincoln Electric Co.'s North Haven, Conn., office. He will be in charge of sales throughout the state of Con-



Modern Insulating Materials Need Stic-Klip For Fast, Economical Application

Fiberglas, air cell board, mineral wool sheets, cork, magnesia — there's a Stic-Klip and method of application for almost every insulating material. The Stic-Klip method is perfectly adapted for flat, round, corrugated or unusually-shaped surfaces, either masonry, wooden or metallic. Eliminates drilling, puncturing metal and provides a permanent bond. Stic-Klip applications have been extensively used to insulate —

Commercial and Industrial Buildings
Heating, Ventilating, Air Conditioning and Industrial Processing Equipment
Cold Storage, Acoustical and Marine Installations
Write Dept. AA for illustrated booklet on any of these durable applications of Stic-Klip.

MANUFACTURING COMPANY, INC. 52 Regent Street, Cambridge 40, Mass.



FOR EVERY INDUSTRIAL USE

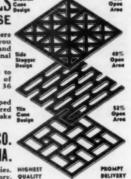
The "Ornamental" light-gauge designs here illustrated are only a few of the many you can choose from in our new Catalog 39 and we are always pleased to quote on original designs or special work of any kind.

For larger unit-openings, using metals up to \(\frac{h}{a} \) in thickness, we offer a wide variety of equally attractive designs in our Catalog 36 on Diamond Architectural Grilles.

Send us your bluepcints. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.

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Sales Representatives in all principal cities. Consult Your Classified Telephone Directory.





in the shop or on the job — a real

portable BCO SHEET METAL BENDING BRAKE

No question about the WEBCO saving

you time and money. It's been designed to handle 20 gauge mild steel on a labor saver . . . You can't beat the WEBCO for duct work and special fabrication. Please 1/2" folding arm, easily and with accurate alignment. write today for the full story!

Quality



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'THE RIVAL' STRAP HANGER

for single bead and double bead gutter

SIZES: 4" - 5" - 6" GALVANIZED-COPPER-STAINLESS

Packed 100 pieces per carton.

SOLD THRU LEADING JOBBERS EVERYWHERE

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Philadelphia 6, Pa.



PATCO MFG, CO. 321 N. 3rd Street Phile. 6, Pe.

AUTOMATIC SHUTTER WITH ALUMINUM LOUVERS

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"ELGO" TYPE AUTOMATIC SHUTTER Front View (Open)

FIEE CATALOG

2738 W. Warren

ELGO SHUTTER & MANUFACTURING CO. Detroit 8, Mich.



Order this time saver today

JET PATTERN DEVELOPER



6950 OMPLETE WE LAYOUT ANY PATTERN COMPLETE IN

ATTACH TEMPLATES, ADJUST FOR PITCH OR OFFSET AND ROLL OUT PATTERN.

H. OWENS COMPANY

9300 Venice Blvd., Culver City, California

ADAMS

Clean-Out Door

(Cast Iron)

Sizes: 5x7 ins.

to 30x24 ins.



Buy Adams Known Quality

ADAMS COMPANY

Established 1883 • DUBUQUE, IOWA BRIDGE STREET



STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

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BROOKLYN, N. Y.

Prefabricated Ducts,

also conductor pipe, eaves trough, drip edge, rake strip, etc.

THOR METAL PRODUCTS CO., INC.

Box 118 Eastwood Station

Syracuse, N. Y.

REPAIR PARTS FOR

STOVES, OIL STOVES, FURNACES AND BOILERS REPAIR SERVICE ON A.P. CONTROLS

— Distributors of —

HEATING & AIR CONDITIONING SUPPLIES

Asbestos Paper - Pipe Covering - Dust Insulation
INSULATION FOR ALL NEEDS

A. G. BRAUER SUPPLY CO.

THE COMPLETE HEATING SUPPLY HOUSE 2100 WASHINGTON AVE. ST. LOUIS 3, MO.

MORE Rigid...LESS Cost

ONE PIECE BLOW PIPE ELBOW

HOODS • BALL JOINTS • FLOOR SWEEPS
 BLAST GATES • STAMPED AND ROLLED ANGLE RINGS

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necticut. Richard P. Lindgren has been appointed district manager of the company's Moline, Ill., office and will handle sales in the northwestern Illinois and central and eastern Iowa areas.

- MILTON P. VEITH as regional manager for the Detroit sales region of Airtemp Div., Chrysler Corp. Mr. Veith was previously in charge of the division's New Orleans sales region, in which capacity he is being succeeded by Warren Fitch, formerly manager of the Memphis, Tenn., district.
- ▶ HAROLD WILKINSON as representative for the Heil Co. handling sales of heating and cooling equipment in the states of Virginia and Maryland, the District of Columbia, and the Lancaster-York area of Pennsylvania.



Harold Wilkinson



Donald P. Moore

- DONALD P. MOORE as representative in the Long Island, N. Y., territory for Delta Heating Corp. He will work in cooperation with Dick Halberg, sales supervisor for New York City.
- ▶ GEORGE C. BLEW as representative for Chelsea Fan & Blower Co., Inc., serving a territory which includes Kansas, Nebraska, Oklahoma, northern Texas, western Missouri and the city of Ft. Smith. Ark.



George C. Blew



Wayne Gif

▶ WAYNE GIFT as representative covering Indiana and Kentucky for Skuttle Mfg. Co. T. C. French Co., Inc., Cleveland, has been assigned the territories of Ohio and western Pennsylvania.

Rates for display space in the Service Section are \$12.00 per inch per insertion. One-inch minimum space accepted. Closing date - twentieth of the month preceding issue.



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